The Iron Age

A Review of the Hardware and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 80 Beekman Street, New York.

Vol. XI: No. 13. *New York, Thursday, March 27, 1873.* *Four Dollars a Year. Single Copies, Ten Cents*

Old King Coal.

Old King Coal was a merry old soul;
"I'll move the world," quoth he:
"My country's high, and rich and great,
But greater she shall be;"
And he called for the pick, and he called for the spade,
And he called for the miners bold;
"And it's dig," he said, "in the deep, deep earth.
You'll find my treasures better worth
Than mines of Indian gold."

Old King Coal was a merry old soul,
Yet not content was he;
And he said, "I've found what I desired,
Though 'tis but one of three,"
And for water he called, and he called for fire,
For smiths and workmen true.
"Come, build me engines great and strong,
We'll have," quoth he, "a change ere long;
We'll try what steam can do."

Old King Coal was a merry old soul;
"'Tis fairly done," quoth he,
When he saw the myriad wheels at work
O'er all the land and sea.
They spared the bones and strength of men,
They hammered, wove and spun;
There was naught too great, too mean or small;
The giant Steam had power for all—
His task was never done.

Old King Coal was a merry old soul;
Quoth he, "We travel slow.
I should like to roam the wide world round
As fast as the wild winds blow."
And he called for his skillful engineers,
And soon through hills and dales,
O'er rivers wide, through tunnels vast,
The flying trains like lightning passed,
On the ribs of the mighty rails.

Old King Coal was a merry old soul;
A merry old soul is he;
May he never fail in the land we love,
Who has made us great and free.
While his miners mine and his engines work,
Through all our happy land,
We shall flourish fair in the morning light,
And our name, and our fame, and our might, and our right,
In front of the world shall stand.

Recording Steam Gauges.

A compilation made two years ago revealed the fact that from 1816 to 1871, fifty-six years, there had occurred eighty-nine steamboat boiler explosions on Western rivers, involving the loss of 8807 lives. Of this number 3100 lives had been destroyed during the last eighteen years of the above period. These statistics are startling, and reveal an increasing carelessness in the matter of human life. There has been no lack of scientific devices to remove the difficulties which have given rise to explosion; and in the invention of steam registering machinery, especially, the advances have been marked and the ingenuity displayed remarkable. Accurate and searching investigations have been instituted by experts to determine the causes which produce explosions, and much light has thereby been thrown upon the subject. Experimental tests have been made to ascertain the strength of various forms of boilers, and the manner in which they act under different circumstances. It is not our intention here to refer to the many causes which are supposed to give rise to such disasters, but simply to speak of the one prolific cause of accident, namely, that of allowing the pressure of steam to accumulate to an excessive degree, to which, in the end, must be referred by far the majority of explosions. To correct this evil is the function of the ordinary steam pressure gauge. The introduction of this device was undoubtedly an immense improvement, and a gauge must be regarded as an indispensable attachment to every engine. But it leaves too much to the discretion of the engineer. He may run his steam above the point allowed by the rule of the vessel or works in which the boiler is located, and thus incur a dangerous risk, while no one is the wiser. He may be careless also, leaving his engine and allowing the steam to accumulate to a dangerous extent, and upon his return restore the equilibrium of pressure without his negligence being discovered. It must be evident that by such treatment the strength of a boiler is impaired; every undue strain or overheating to some extent weakens the tenacity of the plates or tends to create rupture at the joints or rivets. An explosion occurred at Water Valley, Miss., under the following circumstances: The day previous to the explosion the safety valve was leaking. Instead of grinding down the valve the engineer placed a piece of gum packing under it. This blew out. A new piece was put under and then a brace was placed between the valve lever and the roof of the building, to hold it down, and retain the packing. Having thus taken as much risk as possible, he got up steam, running the pressure up to 105 lbs., "the last time he looked at the gauge." No one about the establishment knew anything about the pressure of steam at the time of explosion. A captain may indulge in racing, and carry, in so doing, a dangerous head of steam, but neither the proprietor nor passengers ascertain, generally, the pressure to which the boiler has been subjected during the trip, and the recklessness of the engineer passes unpunished.

Herein is found the necessity for recording steam gauges. In such a device the pressure once indicated does not vanish on the change of pressure, but remains as a witness, in case of accident either exonerating or convicting the engineer. Men are less liable to indulge in carelessness when they cannot obliterate the record of their negligence, and when this record may in the future be brought up against them as evidence which may expose them to public indignation and punishment. By such a contrivance also the proprietors are able to judge of the capability and trustworthiness of their engineers, and are thus rendered responsible for the retention of incompetent men, and by this simple means perhaps a large proportion of disasters might be prevented. The importance of these considerations was acknowledged by Congress in the amendment to their act, passed on the 28th of February, 1871, for "the better security of life on board of vessels propelled wholly or in part by steam, and for other purposes." The amendment was in effect as follows:

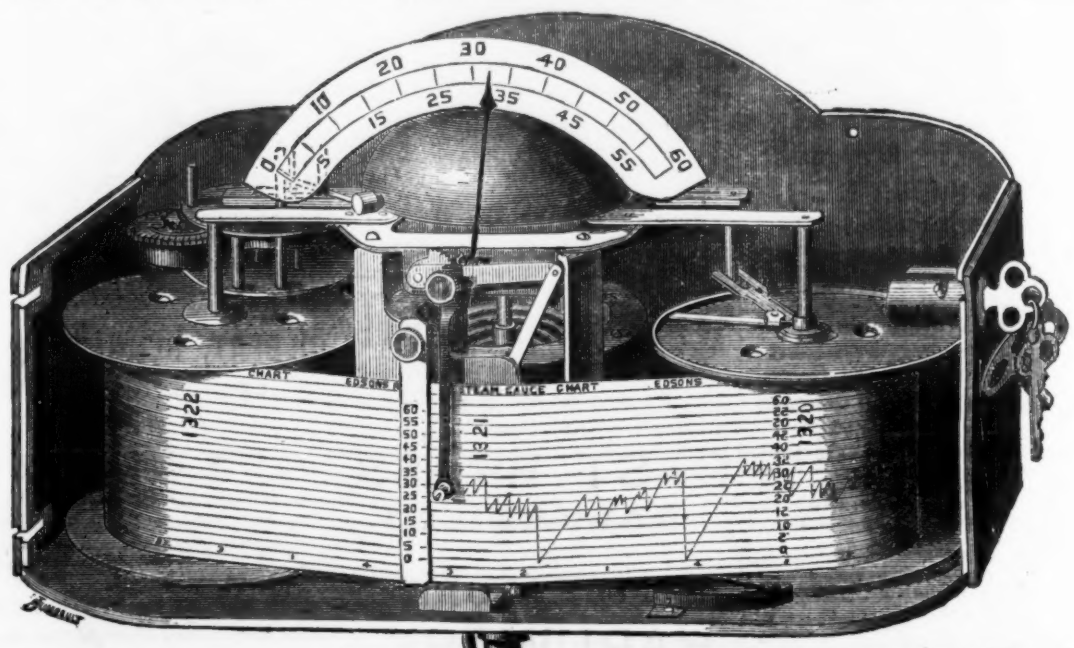
"That the owners of vessels propelled wholly or in part by steam power, and used for conveying passengers, shall procure and attach to every boiler in use on board, such steam gauges as shall be most reliable and durable, and which shall indicate and automatically record upon charts all pressures and degrees of fluctuation therein as they occur; and the supervising or local inspectors of steam boilers shall have access to the charts at any time for examination, and they may affix to every such steam-recording apparatus their special locks or seals whenever they deem it necessary to do so, in order to secure a faithful and true record of the pressure sustained within the boilers.

The committee of the U. S. Board of Supervising Inspectors, on gauges, etc., reported that the Edson Recording Steam Gauge, of which we here publish engravings, answered the requirements of the law.

The first of the two engraving which we here present represents the Edson recording steam gauge with door removed, to show internal arrangement. The second is a longitudinal section of the same, showing the details of the apparatus.

The gauge consists of three chief parts, the index, showing the pressure on a graduated arc, the continuous pressure recorder, and the alarm for indicating excess of pressure. The mechanism by which these results are obtained, are, first, the parts devised for obtaining the necessary movement from the steam pressure, and the means adopted for converting it into the various motions required.

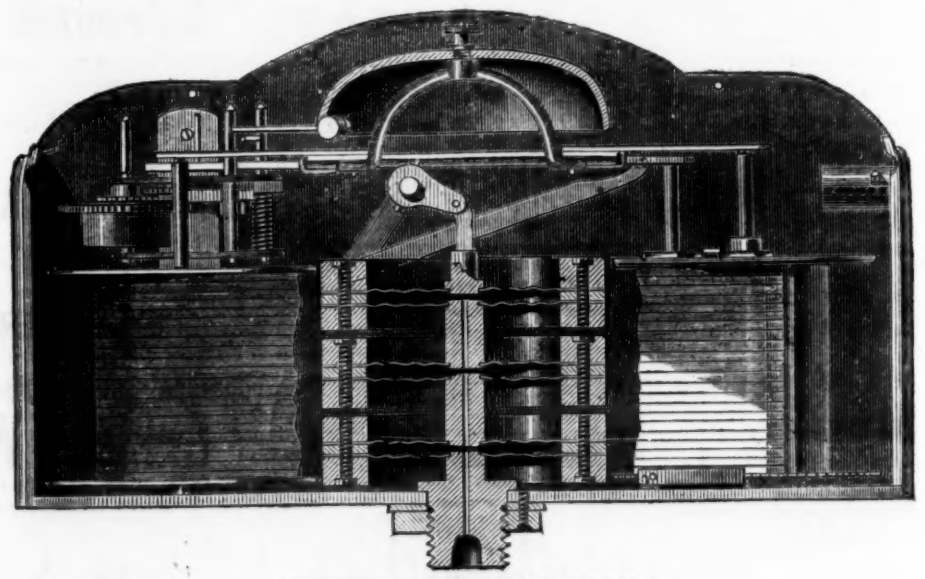
The pressure acts upon circular elastic chambers, composed of thin circular steel discs with or without corrugation, each pair formed into a chamber by means of a ring interposed between their outer edges, and having two compressing rings, the whole being secured firmly together by screws, so as to be steam and air tight. The handle of the inlet steam cock is passed into the bottom of the gauge case, and is so secured that it cannot be withdrawn until the door of the gauge is unlocked, thus preventing any tampering with the records, which would affect their credibility in case of reference thereto in event of disaster before a coroner's or other jury.



EDSON'S RECORDING GAUGE WITH DOOR REMOVED.

The movement communicated by the steam pressure is transferred, by a suitable mechanism, to the pencil carrier represented in the upper engraving, which records the pressure upon the traveling slip of graduated paper as indicated. So long as the pressure remains constant the pencil remains in one place, thus making only a point upon the paper. When the pressure changes, an ingenious mechanism carries the paper along from left to right, and the pencil ascends or descends sufficiently to indicate the required pressure, thus making a diagonal line. The paper consequently exhibits a jagged line which furnishes a true record of pressure. If, however, it is desired to keep, in connection with the record of pressure, a record of the time at which the various changes occurred, a form of instrument is used in which the paper is actuated at a uniform rate of motion, and is also mechanically perforated at short intervals so as to indicate the exact periods during which variation of pressure takes place. The instrument is also provided with an index finger, by which the pressure at any moment may be easily read, as in ordinary pressure gauges. An alarm is placed in the instrument and indicates the fact that the pressure has reached any particular degree. It is only necessary to add that the paper upon which the diagrams are traced is continuous, and rolled upon the delivery drum, whence it passes in front of the gauge to the receiving drum. The paper is ruled in horizontal lines, for convenience in reading the tracings of pressure. It is obvious that with this instrument, continuous pressure logs may be taken, which shall be unbroken throughout a long voyage.

The objects of the gauge may be summarized as follows: To furnish a check upon all those in charge of steam machinery, inciting them to utmost vigilance; to furnish an engineer means of obtaining an indubitable voucher of his capacity, as well as of his fidelity in the discharge of his duties, and a reference, when disputes or differences occur, in case of disaster, to fix the responsibility where it properly belongs; to effect a saving in fuel, by regulating the pressure, and to diminish injurious strain on boiler, and wear and tear of machinery; to secure any desired degree of heat, by maintaining the relative proportion of steam pressure necessary in factories, drying establishments, etc., where the proper regulation of the temperature is indispensable; to afford reliable and tangible data for scientific and other investigations, for which purposes, these "Charts" or "Steam Logs" should always be dated and filed away, on removal, for future reference to reduce insurance risks to a minimum, &c.



LONGITUDINAL SECTION OF RECORDING GAUGE.

It should be remarked that the gauges are supplied with combination locks, which prevent them being tampered with by any one except the person holding the key. The office of the company is 91 Liberty street, New York.

Stocks of Iron in the West.—A correspondent of the Pittsburgh *Commercial*, writing from Cleveland, Ohio, says: "From a recent flying trip to the Steubenville and Wheeling furnaces, I learn that there are between 6000 and 7000 tons of pig iron on hand, which is almost exclusively of inferior grades and comparatively unsaleable. There are no unsold stocks of the best irons, and large orders for them have been booked for future delivery. Coming north to this place, the increase of ice upon the ponds and marshes, and of snow drifts behind the shelter of patches of woodland, indicated the steady advance toward colder regions; and upon reaching the lake, a vast white expanse of ice covered the surface as far as the eye could reach. A strong, warm south wind prevailed last night and to-day, driving the ice out of sight into the lake. Another strong wind blowing this evening from the north will doubtless drive it all back; and thus it comes and goes, surging back and forth, until it becomes water-soaked and sinks out of sight. A soft, warm, gloomy day cheers the heart of the shipper, as it gives promise of the earlier opening of navigation and of lower freights. So far as I can learn from inquiry here, the 60,000 tons of pig iron on hand two months ago in the Shenango and Mahoning Valleys has become somewhat reduced, but there still remains perhaps 45,000 tons on hand. This stock, like that above named, is mostly of low grades, and was made from the inferior ores so largely distributed last year. The consequence has been to make the furnacemen anxious to secure none but good ores, and poor qualities have become a perfect drug at almost any price. The best ores have been largely sold, and are becoming comparatively scarce. Private European advices shown to me indicate the shipment to this country of only about one-third as much Scotch pig as we got last year."

Prof. Abel, the well known English chemist, gives the following as the melting points of alloys composed of tin and lead in the proportions set forth. These results were derived from repeated experiments of the most exact and critical nature, and are probably correct:

Constituents. Parts Tin.	Parts Lead.	Melting point. Deg. Fah.
2	1	310
9	4	344
10	4	348
11	4	352
12	4	356
13	4	360
17	4	370
22	4	380
4	5	390
4	6	413
4	7	420
4	9	460
4	12	482
4	15	494
4	17	502
4	20	512
4	25	520
4	30	530
4	38	540
4	48	550
4	70	558
	Melting point of lead—	620

There is building at the Delamater Iron Works, in this city, a system of hoisting machines for the Calumet & Hecla Copper Mines of Lake Superior, which are designed to hoist from four shafts at a time, and from the enormous dept of 2880 ft., or more than a half a mile. There are four drums, each capable of taking on 2880 ft. of 1¼ in. wire rope, without winding the turns over each other, and each drum will be able to raise 10,000 lbs. at the rate of 350 ft. per minute. All four of the machines are driven by a pair of horizontal "Rider Engines" of 300 H. P. Steam will be furnished from six boilers, of 54 ft. diameter and 27 ft. long. This machinery is to be ready for shipment on the opening of lake navigation in the spring. A fire-proof building will cover the whole plant when erected at the mines. The work is from the designs and superintendence of George H. Reynolds. These works have constructed and are contructing a large number of similar machines, but of less power, for the iron mines in various parts of the country.

The Berlin *Industrie Blatter* says: In order to separate iron and brass filings it has been customary to draw a magnet by hand through the mass, thus taking out the iron and steel while leaving the brass. Recently a very suitable machine appeared for saving this tedious hand labor, invented by a French engineer named Bavin, in the machine works of Call & Co., Paris Now, however, Mr. Webb, employed in the splendid works of the London and Northwestern Railway, at Crewe, has reached the desired end by a very simple and economical process of smelting. The mixed iron and brass turnings and brass slag are mixed with limestone, coal dust, and oxide of iron or iron scales, and smelted; the brass settles through the fluid slag to the bottom and is run off into ingot molds.

It is a recent French discovery, that adding a minute quantity of gelatine to a solution of sulphate of copper, prevents the brittleness which copper is said to have that has been deposited by the action of the galvanic battery. The softness and malleability of copper deposited from a solution of a copper salt by electrolysis is increased by increasing the conductability of the solution. Thus acid added to the bath until it has reached the point when the hydrogen gas is about to be given off, will hasten the decomposition, and the copper obtained will be soft and pliable. But what gelatine does to produce an effect, or rather why, we do not understand.

It has been proposed in the Nebraska Legislature to offer a reward of $50,000 to the finder of a four foot vein of coal in that State.

Metals.

ANSONIA
BRASS & COPPER CO.
19 and 21 Cliff Street
(Adjoing Office of Phelps, Dodge & Co.)

Sheet Brass,	Sheet Copper,
Planished Brass,	Planished Copper,
Meyer's Patent,	Copper Rivets & Burs,
Brass Seamless Scoops,	Braziers' & Bolt Copper
Brass Wire	Braziers' Rivets,
Hayden's Patent Brass	Copper Tubing,
Kettles,	Copper Bottoms,
Brass Tubing	Copper Wire,
Lamp Burners,	Iron Wire,
Gun Burners,	Zonce Wire.

A large variety of Wood and Bronze Case Clocks.

MANUFACTORIES AT ANSONIA, CONN.

Phelps, Dodge & Co.,
IMPORTERS OF
TIN PLATE,
Sheet Iron, Copper, Pig Tin Wire, Zinc, etc.
MANUFACTURERS OF
COPPER and BRASS.
Cliff St., bet. John and Fulton,
NEW YORK.

T. B. CODDINGTON & CO.,
25 & 27 Cliff St., New York.
Importers of
TIN PLATES,
And METALS of all descriptions.

A. A. THOMSON & CO.,
Importers and Dealers in
Tin Plate, Sheet Iron,
ZINC, COPPER, WIRE,
Block Tin, Spelter, Solder, &c.
Nos 213 and 215 Water and 119 Beekman Sts.
NEW YORK.
P. O. Box, 61.

SCOVILL MFG. CO.
No. 4 Beekman St., NEW YORK,
MANUFACTURERS OF
SHEET AND ROLL BRASS,
BRASS AND COPPER WIRE,
GERMAN SILVER,
BRASS BUTT HINGES,
METAL LAMPS AND TRIMMINGS,
COAL OIL BURNERS,
METAL BLANKS CUT TO ORDER.
CLOTH AND METAL BUTTONS, in every variety.
PHOTOGRAPHIC GOODS.
Jerome's Celebrated Clocks.
AGENCIES:
4 Beekman Street, New York,
131 Federal Street, Boston,
105 Randolph Street, Chicago.
MANUFACTORY:
WATERBURY, CONN.

Lead Pipe and Sheet Lead,
Improved
Tin Lined Lead Pipe,
Block Tin Pipe, Bar Tin, Pig Tin,
Pig Lead, Solder, &c.
The Colwells, Shaw & Willard Mfg. Co.
No. 213 Centre Street, New York.

EVANS & ASKIN
BIRMINGHAM, ENGLAND,
Refiners of Nickel and Cobalt.
SOLE AGENTS,
VAN WART & McCOY,
43 Chambers St., New York.
Nickel and Cobalt always in stock.

Augustus Belknap, Jr.
Metal Broker,
Tin Plate, Block Tin, Spelter,
Iron Copper, etc.
60 Beekman Street, New York.
Hardware Orders attended to.

Metals.

Wallace & Sons,
Manufacturers of
Brass and Copper Wire,
SHEET BRASS,
Copper Rivets & Burs,
BRASS & IRON JACK CHAIN,
Braziers', Bolt & Sheathing Copper,
Stair Rods, Copper Tacks and Nails,
Brass Butts, &c., &c.
89 Chambers and 71 Reade Sts.,
NEW YORK.
Mills, ANSONIA, CONN.

Waterbury Brass Co.
JOHN SHERMAN, Agent,
No. 52 Beekman Street, NEW YORK.
Mills at WATERBURY, CONN.
Sheet, Rolled and Platers' Brass,
GERMAN SILVER,
Copper, Brass and German Silver Wire,
BRASS AND COPPER TUBING,
COPPER RIVETS AND BURS,
BRASS KETTLES,
WASH BASINS,
Door Rail, Brass Tags & Step Plates.

BENEDICT & BURNHAM MFG. CO.
MANUFACTURERS OF
Rolled and Sheet Brass and German Silver, Brass, Copper and German Silver Wire, and Beading.
Plain and Fancy Tubing, Brass and Copper Rivets and Burs, Brass and German Silver Castings, Piano-Forte and Wrought Brass Butt Hinges, Coal Oil Burners, Lamps and Lamp Trimmings of every description, Patent Lamp Scissors, &c., &c.
Depots—78 Reade St., N. Y., 68 Federal St., Boston, and 17 N. Seventh St., Philadelphia.
Capital $400,000.
Aaron Benedict, Pres.
Chas. Benedict, Treas. Chas. Dickinson, Secy.

BROOKLYN
BRASS & COPPER CO.,
JOHN DAVOL, Prest.,
No. 100 John Street, NEW YORK.

Sheet Brass,	Copper Sheets,
Roll Brass,	Copper Segments,
German Silver,	Copper Circles,
Brass Tubing,	Copper Bolts,
Ger. Silver Tubing,	Copper Wire,
Brass Wire,	Copper Rivets & Burs.
Ger. Silver Wire,	Copper Sheathing,
Brass Door Rail,	Copper Bottoms,
Brass Rivets & Burs,	Copper Tube,
	Braziers' Solder.

MILLS, BROOKLYN, L. I.

Thos. J. Pope & Bro.
292 Pearl Street, New York,
Furnace Agents for Anthracite, Charcoal and Scotch
PIG IRON,
COPPER, SPELTER,
TIN, LEAD, NICKEL, BISMUTH, &c.

U. O. CRANE.
BROKER IN
PIG IRON & METALS,
104 John St. New York.

Mosselman Zinc.
Assorted widths and numbers, by cask or sheet, in store, at lowest rate.
A. A. THOMSON & CO.,
Box No. 61. 213 and 215 Water Street, N. Y.

SOLDER.
For Sale at lowest market rates, by
A. A. THOMSON & CO.,
Box 61. 213 & 215 Water Street, N Y

Metals.

The Plume & Atwood Mfg. Company,
MANUFACTURERS OF
SHEET and ROLL BRASS and WIRE,
German Silver and Gilding Metal,
Copper Rivets and Burs,
Kerosene Burners,
Shoe Eyelets, Lamp Trimmings, &c.
80 Chambers Street, New York.
8 S. Market Street, Boston.
Rolling Mill, THOMASTON, Ct. | Factories, WATERBURY, Ct.

Coe Brass Mfg. Co.,
WOLCOTTVILLE, CONN.,
MANUFACTURERS OF
HIGH AND LOW BRASS,
Gilding Metal,
COPPER and GERMAN SILVER,
In Sheets and Rolls.
Brass, Copper & German Silver Wire,
COPPER RIVETS & BURS,
BRASS, IRON & BRAZIERS' RIVETS.
A specialty made of
BRASS & GILDING METAL
For Metallic Cartridges.

W. & J. TIEBOUT,
290 Pearl St., near Beekman,
NEW YORK,
Manufacturers of
CAST BRASS,
GALVANIZED
AND
SHIP CHANDLERY HARDWARE.

MAX HARNICKELL,
Broker in Metals,
85 Beaver Street,
NEW YORK.
Advances made on Consignments.

TIN PLATE
and
PIG TIN,
In Store and For Sale by
A. A. THOMSON & CO.
213 & 215 Water St., NEW YORK.

JOHN W. QUINCY,
98 William Street, New York,
Dealer in
AMERICAN AND FOREIGN SPELTER,
COPPER, TIN, NICKEL,
And Metals generally.

Fuller, Dana & Fitz,
IMPORTERS AND COMMISSION MERCHANTS,
BOSTON, . 110 North Street.
Tin Plates, Sheet Iron, Metals, Iron, Steel, Etc.
Wrought Iron Beams, &c., for Buildings.
Exclusive Boston Agents for the sale of Morris, Tasker & Co's Lap Welded Boiler Tubes. Patent Cold Rolled Shafting. The "Burden Brat" Iron, *Tensile Strength* 78,000 lbs. The Celebrated Bessemer Steel Brown's *Original* Concord Axles. The Salem Lead Co.'s Lead Pipe.
☞ SWEDISH, NORWAY, ENGLISH, AMERICAN and SCOTCH IRON. RUSSIA SHEET IRON.
FULLER, DANA & FITZ'S *Price List on application.*

CRAGIN BROS. & CO.
TINNERS' SUPPLIES,
Plumbers' Materials and House Furnishing Goods,
141, 143 & 145 Lake Street, CHICAGO.
AGENTS IRON CLAD MILK CAN CO.

IRON AND STEEL WIRE ROPE,
MANUFACTURED BY
JOHN A. ROEBLING'S SONS
TRENTON N. J.
FOR
INCLINED PLANES, MINING,
STANDING SHIP RIGGING,
SUSPENSION BRIDGES, FERRIES,
STAYS AND GUYS ON DERRICKS,
CRANES & SHEARS, ELEVATOR TILLERS, &c.
A large stock of Wire Rope constantly on hand Orders filled with dispatch.
☞ For strength, size and cost see circular which will be sent on application.

Wire, etc.

National Wire and Lantern Works.
Warehouse, 45 Fulton St., New York

HOWARD & MORSE,
MANUFACTURERS OF
BRASS, COPPER AND IRON
WIRE CLOTH,

LOCOMOTIVE Spark Wire Cloth,
IRON WIRE BOLTING CLOTH,
Square Wire Smut Cloth.
Ship and Railroad Lanterns,

Signal Lights, Conductors' Lanterns
ADJUSTABLE GLOBE HAND LANTERN,
DESK AND OFFICE RAILING
Riddles, Coal and Sand Screens,
NURSERY FENDERS & SPARK GUARDS
Ornamental Wire Fence.

GILBERT, BENNETT & CO.,
GEORGETOWN, CONN.,
MANUFACTURERS OF
Iron Wire, Curled Hair & Glue,
Brass, Tinned and Iron Wire Sieves, Coal, Oat and Hair Sieves, Hair and Wire Gravy Sieves, Brass and Iron Riddles, Brass and Iron Wire Cloth, Cheese Safes, Coal and Sand Screens, Wire Ox Muzzles.
Also Painted Screen Wire Cloth.
Wood Handle Stove Cover Lifters, Coal Hods, Pressed and Patent Cast Shovels, Stove Scrapers and Pokers, Galvanized Conductor Strainers.
GILBERT'S RIVAL ASH SIEVE.
BLOOD'S PATENT FLOUR SIEVE.
Warehouse, 273 Pearl Street, NEW YORK.
☞ All kinds of Galvanizing done expeditiously, and on reasonable terms. ☜
The highest price paid for Cattle's Tails and Hog's Hair.
MANUFACTURERS OF THE
UNION METALLIC CLOTHES LINE WIRE,
the best in use. Agents wanted.

Galvanized Wire
for TELEGRAPHS, CLOTHES LINES, FENCES.
The best in market.
ALFRED FIELD & CO.,
47 John Street, NEW YORK.

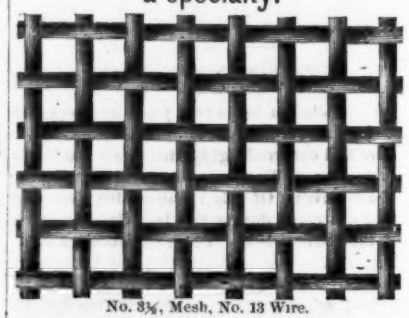
HAMILTON & RAINEAR'S
Philadelphia Wire Works.
Manufacturers of
WIRE
Of every description. A specialty is made of
Charcoal Iron and Bessemer Steel
SPRING WIRE.
No. 1716, 1718, 1720 North 5th Street,
PHILADELPHIA, PA.

Wire, etc.

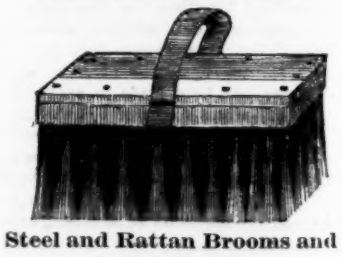
Washburn & Moen Mfg. Company,
WORCESTER, MASS.
Established 1831.
PHILIP L. MOEN, Pres. WM. E. RICE, Treas.
CHAS. F. WASHBURN, Sec'y.
MANUFACTURERS OF
IRON & STEEL WIRE.
WIRE RODS of all Grades: Round Iron, Rivet quality 3-16 in. to ½ in., cut to any length
Owners and exclusive Operators of the
PATENT CONTINUOUS MILL,
Producing Iron and Steel WIRE, in coils of 100 lbs., without SEAM or WELD.
Plain and Patent Galvanized Telegraph Wire,
Market and Stone Wire, Annealed Fence and Grape Wire in long lengths; Coppered Pail-Ball Wire; Rope, Bridge, Bolt, Screw, Rivet, Buckle and Chain Wire. Wire for the Manufacture of Card Clothing, Heddles, Reeds, &c. Piano-string Covering Wire, Tinned Broom Wire and Tin-plated Wire of all sizes. A specialty is made of Clock, Machinery, Gun-Screw and Spiral-Spring Wire, and Refined Wire to Pattern for particular purposes, from selected stamps of Norway Iron. Any grade of Wire furnished, Annealed, Bright, Polished, Coppered, Galvanized or Tin-Plated. Wire furnished, Straightened and Cut to any length.
Steel Crinoline Wire, Patent Linen finish.
Unrivalled Steel Music Wire.
Steel Wire for Springs, Needles and Drills. Market Steel Wire kept in stock, all sizes.

New Haven Wire Co
MANUFACTURERS OF
MARKET, TELEGRAPH, FENCE,
and all kinds
IRON WIRE.
New Haven, CONN.

Hartford Wire Works,
Office and Manufactory at
WETHERSFIELD, CONN.
Manufacturers of
WIRE GOODS,
Brass, Copper and Iron Wire Cloth.
Locomotive Spark Wire Cloth a specialty.



No. 3½, Mesh, No. 13 Wire.
Coal and Sand Screens, Ash Sifters, Cheese Safes Wire Ox Muzzles, Railroad Car Bas- Brass, Iron and Galvanized Riddles.
Steel Casting Brushes.



Steel and Rattan Brooms and Flue Brushes,
Wire Flower Stands, Baskets and Trellises,
Wire Window Guards, &c., &c.
Send for Illustrated Catalogue and Price List,
SAMUEL PARKER & CO.,
Wethersfield, Conn.

JASPER E. CORNING,
MANUFACTURER OF
Heavy Crimped Wire Work
Suitable for Office Railings,
Window Guards, Bank Counters, &c.,
38 Cliff Street, NEW YORK.

Chicago National Wire Cloth Mill,
36 TO 48 DILLER STREET.
EVANS & CO., Proprietors.
OFFICE, 281 MADISON STREET, CHICAGO, ILL.
CRIMPED LOCOMOTIVE SPARK CLOTH
A SPECIALTY.
Price and Weight per Square Foot, by the Roll. For Steel Wire, add 7%

3 x 3 Mesh.			3½x3½ Mesh.			4 x 4 Mesh.			6 x 6 Mesh.			8 x 8 Mesh.			10 x 10 Mesh.		
No. of Wire	Wt. per sq. foot	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot.	price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.
10	3.47	40	11	3.20	38	12	2.80	35	14	2.43	33	16	2.00	30	18	1.39	30
11	2.75	32	12	2.45	31	13	2.15	30	15	1.97	30	17	1.47	25	19	1.08	25
12	2.10	26	13	1.85	25	14	1.62	25	16	1.51	25	18	1.11	20	20	0.76	20
13	1.61	22	14	1.41	20	15	1.31	21	17	1.10	20	19	0.85	18			

These Cloths are used for Mines, Jail, Asylum, and Storehouse Window and Door Guards, Malt Floors, Bulkheads and Floors for Grain Elevators and Grain Vessels. SPECIAL FIGURES FOR LARGE ORDERS.

The Swift Mill.

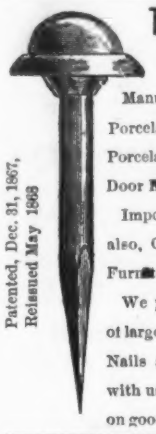
Established in 1845.

Letter "B" Geared Counter Coffee or Spice Mill.

Stands nearly 2½ feet high. Is highly finished, colors deep Vermilion and Gold. We make more than 20 different styles and sizes.

Send for catalogue. Manufactured exclusively by

LANE BROTHERS,
Millbrook, N. Y.



Patented, Dec. 31, 1867, Reissued May 1868

T. C. RICHARDS & CO.,

47 Murray Street, N. Y.,

Manufacturers of Richards' Patent Porcelain-head Picture Nails; also, Porcelain Picture, Drawer, Shutter, and Door Knobs, etc., etc.

Importers of German Brass Goods, also, China, Glass, Steel, and Silvere Furniture Nails Wire Nails etc,, etc.

We particularly invite the attention of large buyers to our Patent Picture Nails and Knobs being a specialty with us, we offer satisfactory discounts on good orders.

O. LINDEMANN & CO.,

MANUFACTURERS OF

Japanned and Patent Bright Metal BIRD CAGES,

Pat. Oct. 4th, 1870; Nov. 7th, 1871; March 12th, 1872
Re-Issued Oct. 29th 1872.

Office and Salesroom, No. 254 Pearl St., New York
Factory, Nos. 252, 254 & 256 Pearl Street.

Geo. A. Boynton,
BROKER IN IRON
70 WALL ST, N.Y.

IRON, NAILS, NUTS WASHERS, AND CARRIAGE BOLTS.

PACKARD, GOFF & CO.,

JOBBERS OF

Iron, Nails, Nuts, Washers, and Carriage Bolts.

YOUNGSTOWN, O.

We have three Rolling Mills, a Nut and Bolt Factory located here. Orders solicited.

RIEHLE BROTHERS,

Ninth Street, near Coates, Philadelphia.
New York Store, 93 Liberty Street.
Pittsburgh Store, 73 Water Street.

"The Celebrated Stock House Scale,"

New Style Testing Machines, all sizes, Wrought Iron Lever R. R. Track Scales, Parallel Crane Beams and Mortising Machines.

L. B. BROOKS,

No. 60 Cliff Street, N. Y.,

Manufacturers of Tatham & Brittin's Patent

Safety Platform Elevator.

Simple, Durable and perfectly Safe. Is independent of Springs, Ropes or Hoisting Machinery. Applied to all Platform Elevators and Dumb Waiters

P. W. GALLAUDET.

Banker and Note Broker,

Nos. 3 and 5 Wall Street,

NEW YORK.

HARDWARE, METAL, IRON, RUBBER, SHOE PAPER AND PAPER-HANGINGS, LUMBER, COAL AND RAILROAD PAPER WANTED.

ADVANCES MADE ON BUSINESS PAPER AND OTHER SECURITIES.

HENDRYX & BARTHOLOMEW,

MANUFACTURERS OF

WIRE CLOTH,

BRASS & COPPER WIRE CLOTH,

Locomotive Spark, Hardware Grade, Galvanized and Tinned Iron Wire Cloth. Green, Drab, Black and Landscape Wire Window Shade Cloth. Brass Milk Strainer Cloth.

☞ Special Orders will receive prompt attention.

ANSONIA, CONN.

New Patents.

We take from the records of the patent office at Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN PROCESSES FOR CONVERTING CAST IRON ARTICLES INTO STEEL.

Specification forming part of Letters Patent No. 135,646, dated February 11, 1873, issued to Richard A. Jackson, of Pittsburgh.

The nature of this invention consists in converting cast iron articles into steel by embedding them, within a furnace, in a compound consisting of charcoal, tan-bark, oxide of iron, and unburned limestone, in about the proportions hereinafter specified, the said ingredients being pulverized and mixed together so as to form a homogeneous mass, and then subjecting them, while embedded in the said compound, to a process of cementation.

Take about thirty-three (33) parts of wood-charcoal; about thirty-three (33) parts of tan-bark, (by preference the refuse—that is to say, tan-bark which has been used for tanning leather); about eighteen (18) parts of oxide of iron; and about sixteen (16) parts of unburned limestone. These several ingredients are pulverized and then thoroughly mixed together so as to form a homogeneous mass of mixed particles, with which form a bed about three inches in depth on the bottom of an ordinary converting furnace. On this bed are laid the cast iron articles which are to be converted into steel. These articles are then covered with the compound hereinbefore described, forming a layer about two inches in depth, and upon this layer is placed another layer of cast iron articles, which are also covered with the compound, and thus layer after layer of the compound and cast iron articles are placed in the furnace until it is filled. The mouth of the furnace is then sealed up, and the furnace is heated as in the ordinary process of cementation. The heat of the furnace is kept up from one to five days, according to the thickness of the cast iron articles to be converted into steel, the thick articles requiring more time than thin ones. After the articles in the furnace have been subjected to heat for a sufficient length of time, the furnace is allowed to gradually cool down. The charge is then drawn out and the converted articles separated from the mass with which they were covered. They are then cleaned and dressed, and may be tempered, hammered, drawn out, and welded in the same manner as is practiced in working cast steel. Hard white "pig metal," sometimes called "pot metal," making the castings which are to be converted into steel by the compound and process described.

Claim.—The union of tan-bark and unburned limestone in compositions of the nature herein described, for the purpose set forth.

IMPROVEMENT IN THE MANUFACTURE OF STEEL.

Specification forming part of Letters Patent No. 135,768, dated February 11, 1873, issued to Thomas Brooks, of Canton, Ohio:

This invention consists in the employment of a new chemical compound in the manufacture of steel by the smelting process, the object of my invention being to produce a grade of high tool steel which shall weld without the aid of fluxes, or other welding compounds. Tungsten, spiegeleisen, charcoal and black oxide of manganese are used, in substantially the proportions and manner hereinafter stated.

Swedish bar iron is preferable, as being of very uniform quality and free from impurities; and to every seventy-four pounds of iron, fourteen ounces of tungsten, fourteen ounces of spiegeleisen, eight ounces of charcoal and half an ounce of manganese are added. The materials are placed in a smelting furnace, and subjected to substantially the treatment usually employed in the production of steel by that method. Steel made in the manner, and by the ingredients above set forth, will be tough and malleable; will weld firmly without the use of fluxes; and will take clean, sharp edges for tools; and will also work into springs of great elasticity and durability.

Claim.—The herein described compound of tungsten, manganese and charcoal, when used substantially in the proportions and manner set forth, for the conversion of wrought or bar iron into steel.

IMPROVEMENT IN BLAST FURNACES.

Specification forming part of Letters Patent No. 133,718, dated December 10, 1872; antedated December 7, 1872, issued to Juan Pattison, of New York:

Figure 1 is a vertical section of a blast furnace embodying my invention; Fig, 2, a half plan of top and half section through line, A, B, of Fig. 1; Fig. 3, a partial section through line, C, D, of Fig. 1; Fig. 4, a partial section through line, E, F, of Fig. 1.

Similar letters of reference in the accompanying drawing denote the same parts.

The object of this invention is, first, to improve the construction of blast furnace for smelting ores, so as to prevent the cracking of the walls from unequal expansion and contraction, and thereby to confine the blast so that it shall fully perform its function; secondly, to improve the means for charging the furnace; thirdly, to improve the arrangement of the tuyeres so as to reduce the ores in a more perfect manner than heretofore. It consists, first, in strengthening the walls of the furnace by means of a system of horizontal arches, vertical iron posts and circumferential bands combined together, as hereinafter described; secondly, in constructing the tramway, the cars and the gates and conducting chutes so as to operate in connection with each other, as hereinafter specified; thirdly, in arranging a series of tuyeres at or near the lower end of the crucible, another at or near the top of the crucible, and a third at or near the top of the boshes, as and for the purpose hereinafter set forth; fourthly, in the arrangement of a set of ovens around or in the upper part of the furnace, in connection with the other parts of the furnace, as hereinafter described; and lastly, in the details of construction, as hereinafter described.

In the drawing, I is the crucible, where the molten metal collects; H, the boshes; G, the cone; N, the top of the charge; and *f*, the shirt-lining or fire-wall of the furnace. A′ A′ are three or more stout iron pillars, constructed in sections, suitably bolted together, and embedded in the masonry of the walls, extending from the bottom to the top of the furnace. Outside of the shirt *f*, above the line C D, is a vertical wall, *c′*, composed of blocks of fire-clay or other suitable material, arranged in

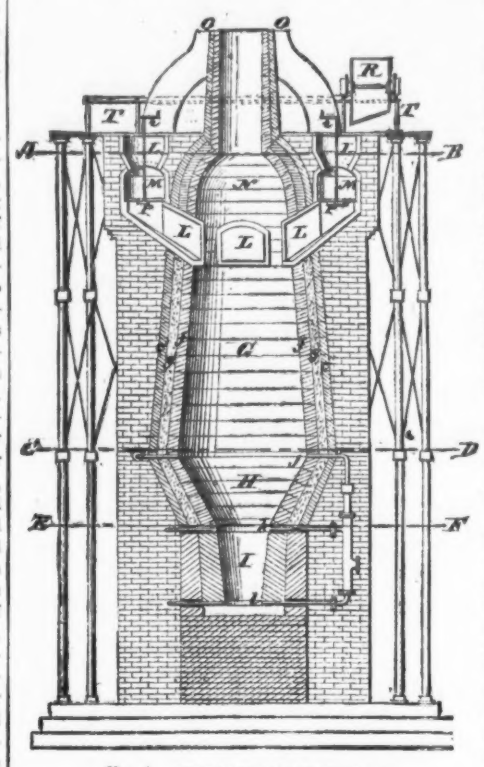


Fig. 1.—IMPROVED BLAST FURNACE.

such a manner that a cross-section at any elevation will show three or more horizontal arches, the key-stones of which support the fire-wall, while the ends abut against the iron pillars A′, as represented in Figs. 2, 3 and 4. Small supplementary walls *c′* of a similar form may be arranged inside the walls *c′*, as shown in Fig. 3, forming arches, whose ends abut against the walls *c′*, while their key-stones support the shirt or fire wall. Iron bands *i i* are placed around the structure, above the line C D, to support the posts A′, and assist them and the arches in resisting the expansion of the furnace walls, diagonal iron rods serving for a similar purpose below the crucible. Between the arched walls *c′ c′* and the bands *i i* the spaces are filled up compactly with brick, stone, or fire clay; or the whole furnace may be covered with iron, and the spaces may be filled with any suitable non-conducting material. Between the walls *c′ c′* and the shirt *f* the spaces are filled, as shown at *g*, with sand or any other available non-conductor or poor conductor of heat, to serve as a cushion for the fire-wall. As the latter expands

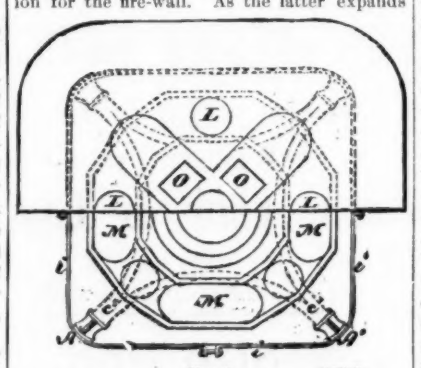


Fig. 2.

under the great heat to which it is subjected it presses the sand cushion *g* against the arches *c′ c′*, which transmit the force to the pillars A′, where it is taken up by the bands *i*, and the walls of the furnace are thereby prevented from cracking. The boshes H are constructed of two courses of fire brick, with a sand cushion between them, supported in a basin, made of thick rolled iron, cut into suitable plates and riveted together, the whole forming an inverted segment of a hollow cone. To the extremities of the basin, on the outer side are attached strong flanges, and to these is riveted an annular chamber or pipe, connected with the jets *j k l* to facilitate the renewing of said jets without the necessity of interrupting the operation of the furnace. The walls of the furnace below the line C D may be filled out, or they may be constructed with only the corner abutments, as shown in Fig. 4, the spaces between such abutments not being filled out. M M are ovens, arranged in passages L leading from the top of the furnace to the interior of the cone at or near the upper end of the charge. These ovens are provided with flues O, and also with grates P, which can be tipped by means of rods *r* extending to the top of the furnace, or to any other convenient point. The flux, &c, is brought to the furnace by means of cars R running upon the tram-way T, and discharging their loads into the passages L either automatically or otherwise. A good method of construction is to incline the tramway just sufficiently to enable the cars to run by their own gravity, or else to attach them to cables, by which they can be moved around the furnace, the cars being mounted on a single pair of wheels and provided with small guide-trucks to assist in following the curves of the track. The cars are also to be constructed with inclined hinged bottoms, locked or latched at their lower edge in such a manner that when over the passages L they will unlatch and dump the load through the passages into the ovens M. When in the ovens the materials are partially or completely calcined and prepared for admission to the furnace, the volatile matters—such as carbonic acid, sulphur, water, &c.—being driven off in the form of gases or vapors and escaping through the flues O. When the furnace requires a fresh supply the grates P are tipped by the rod *r*, and the calcined or calcining materials allowed to fall through in quantities suitable for the purpose, after which the grates are closed again and a new supply furnished to the ovens from the cars R.

In ordinary furnaces the load begins to lose its moisture and volatile gases at an elevation a little below the line of the flues L of my improved furnace. Beneath that point the load absorbs caloric, and calcination begins and continues to the boshes, where the ore begins to be converted from sesquioxide to metallic iron. The metallic iron fuses and drops into the crucible by its own gravity, and from the crucible it is allowed to flow, at the proper time, into sand, to cool into pigs. The conversion is effected ordinarily by forcing hot or cold blasts through jets at the bottom of the crucible at a pressure ranging between eight and twelve pounds to the square inch.

A furnace of the construction described, however, the materials to be reduced—such as ore, flux, etc.—are prepared in the ovens M, as above described, the calcination being advanced, if not completed, before they are admitted into the furnace, by which means a large portion of the caloric is utilized and made available in the furnace that would otherwise be allowed to escape, or be used only for heating blasts or raising steam for power purposes. The elements thus prepared enter the furnace already at an advanced stage of the process, and, by the introduction of a blast of hot or cold air through the upper jets, *j*, at a moderate pressure, the fusion of the iron, &c., is accelerated, and that which is accomplished at the bottom of the boshes in ordinary furnaces takes place before the load reaches the boshes in my improved furnace. As the fusing load descends into the boshes it is supplied with additional blasts from the jets, k, and metallic iron is produced and collected in the crucible, the scoria,

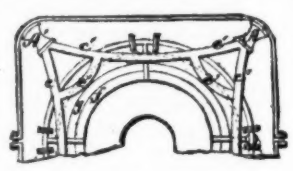


Fig. 3.

slag, and earthy bases being kept floating on the top by the third series of jets, *l*, at the bottom, which forces air through the mass of molten metal. To more thoroughly cleanse the metal in the crucible a powerful current of air is introduced at or near the bottom of the crucible, suspending the introduction of air through the upper jets, *j*, *k*, during this part of the operation by means of the appliances provided for the purpose. The introduction of an adequate quantity of air in this manner at a high pressure produces an intense heat by the combination of the oxygen of the air with the carbon contained in the iron. The rapid union of these elements adds to the temperature of the metal, and as the carbon diminishes the oxygen is enabled to combine with the iron, solving and driving off the elements that adhere thereto, such as sulphuric acid, &c. While the powerful currents of air cause a violent ebulliton in the crucible and the heat drives off the impurities from the iron these mingle with the slag, silica, and other floating matters remaining on the surface of the metal, and leaving it in a condition to be drawn off, comparatively pure, into metallic molds properly lined, to set ready for the squeezers and rolls.

Claim 1. In a furnace, the combination of the supporting-arches *c′* with the corner-posts A and the bands *i*, or an iron covering.

2. The supplementary arches *e′* arranged in connection with the arches *c′*.

3. The arrangement of the tramway and dumping cars, in combination with the passages L and ovens M.

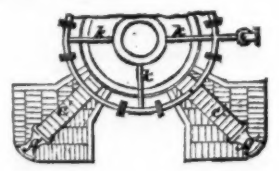


Fig. 4.

4. The furnace having the cone, the boshes, the crucible, the ovens, and the three sets of tuyeres, all constructed and arranged relatively to each other, substantially as described and shown, for the purpose specified.

An alloy of 90 per cent. tin, 8 per cent. antimony and 2 per cent. copper has been found excellent for crank and connecting-rod bearings on the Moscow & Nishni Railroad. On the Kursk-Charcow-Asow Railroad an alloy of 78·5 per cent. tin, 11·5 antimony and 10 copper is considered very superior for pivots of all kinds, slide valves, eccentrics, stuffing boxes, &c. The Swiss Nordostbahn Company, in ordering locomotives recently, required the following preparation as a composition for axle journals: 10 parts of antimony added to 10 parts of melted copper, with 80 parts of tin added, and the alloy run into bars, to be remelted for use.

Iron and Wooden Ships.

A writer in the *Times* says: A few months ago an appropriation was made by Congress for the construction of eight sloops of war. At the time but few persons were aware of the condition of the United States navy, nor is it generally understood now how needful it was that the attention of Congress should be given to the subject of providing for the construction of vessels to supply the place of others which, from rottenness, have fallen to pieces. A reporter of the *Times*, yesterday, made an inspection of the condemned naval steamers Guerriere and Albany—now being broken up at the dock foot of East Eighteenth street—with a view to discover the condition of vessels that ranked second rate in the naval register of last year, and had recently carried a large living human freight upon the high seas. The Guerriere is a vessel of 4000 tons displacement with a length of spur deck of 350 feet, of 46 feet breadth of beam, 28 feet 10 inches depth of hold, and a tonnage of 2490 tons. She was constructed in the Brooklyn navy yard as late as 1866, under the supervision of Mr. Delano, the work being first class, and was supplied with a pair of Mr. Isherwood's engines costing $400,000. Her entire construction and general outfit cost the government about a million and a quarter of dollars—perhaps a little over. She never made more than two cruises beside her trial trip, and on the last cruise she was the flag ship of the Mediterranean fleet, when she carried 21 guns. After this short service she was sold at public aution on the 12th of last December for $54,000, having been found too rotten to admit of repair. On the same day the Albany was sold for $48,000, after being constructed at about an equal expense. A casual glance at the surface would lead one to believe that the wood in the sides of those two vessels was in a tolerably good state of preservation. It is covered by a coating of paint about an eighth of an inch in thickness, which, being removed, the whole ribs and body of the ship—planks six inches thick—can be reduced with the hand of a child to a powder as fine as snuff, the wood is so thoroughly decomposed. The purchaser of these vessels has a large number of men engaged in breaking up and removing the machinery, after which they will be towed to Long Island flats and burned to get at the remaining bolts and bars. While this is the condition of those vessels, there are said to be many others now in actual service and ranking as they did lately, which, though looking fairly, are in an advanced stage of decay. In view of this circumstance, one would naturally inquire of what material should the government construct vessels in order to avoid the loss resulting from such a rapid decay. Another circumstance, of no little interest in itself, connected with the working of the naval department may serve for an answer. Of 32 double-enders built during the war nearly all the wooden ones have since rotted, and have been sold at a mere trifle to be broken up for the metal they contained, while two, which were iron, were purchased by New York merchants not long since at a considerable figure, and are now valuable vessels running from this city to a Southern port.

The Atlantic Mail Steam-ship Company have had a somewhat similar experience, going to show the advantage of iron over timber vessels. That company, at a sale of three of its ships a few days ago, received an offer of $150,000 for the iron ship Crescent City, built in 1860; while their vessels Columbia and Morro Castle, both of timber, built respectively in 1857 and 1856, brought only $68,000 together.

All the steam-ships at present crossing between this port and Great Britain are iron, and the greater part of the American carrying-trade is done by the iron vessels of other countries. A variety of causes contributed to drive that trade away from this country. Another interesting fact in this connection appears from the report of Mr. Joseph Nimmo, Jr., of the Bureau of Tonnage, to the Secretary of the Treasury, estimating that only 12 per cent. of the ships and steam machinery required for war purposes during the rebellion was furnished by all the navy-yards of the United States, private enterprise furnishing the remaining 88 per cent. As it is generally conceded that the rebellion received a fatal blow by the blockade of Southern ports, the importance of this private enterprise can readily be appreciated, and an estimate formed of the difficulties that would have compassed the United States if such aid was not forthcoming. If all the ships then built were of iron, instead of having been broken up, they might have been converted after the war to the increase and improvement of the merchant service. When wooden ships begin once to need repairs a small flaw often requires extensive labor and material to remove it. All the decaying timber must be taken out to make a place for solid jointing and bolting, and the expense is frequently excessive as compared with the vessel's value. Iron ships are in no such position. If a plate is injured it can readily be replaced. Beside, ship builders say that there is less time and capital required in the construction of iron ships. For the construction of wooden vessels, the timber should be cut first in large quantities and left for years to season, the capital, meanwhile, lying idle, while the iron needed in an iron ship's construction need not be out of the mine when the keel is laid.

Iron vessels for the transport of spirits are found to be free from many of the defects of wooden ones, especially such as cause loss. They are made of sheets less than one-tenth of an inch thick, of cylindrical form, about 47 inches long and 32 inches in diameter, with ends slightly convex. The bung is closed by rubber disks, and protected by wooden hoops on each side; there are thin iron hoops around each end, and the interior is protected from rusting by a coating of gum or dextrine.

Iron.

NEW YORK.

GAM'L G. SMITH & CO.,

IRON WAREHOUSE,

342, 344 & 346 Pearl Street, New York.,

Importers and Dealers in

IRON AND STEEL,

COMMON AND REFINED BAR IRON,

SHEET AND PLATE IRON,

Rod, Hoop, Band, Scroll, Horse Shoe, Angle and Tee Iron,

PIG IRON,

OLD RAILS,

WROUGHT IRON BEAMS.

Iron of all sizes and shapes made to order.

PIERSONS & CO. S

Iron Warehouse,

No. 24 Broadway and 77 & 79 New St.,

NEW YORK,

Importers and Dealers in

IRON & STEEL

of every description.

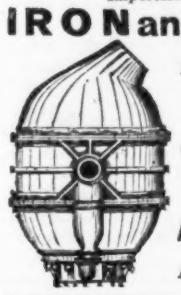
Agents for the sale of Ulster Iron, Messrs. H. Burden & Sons' H. B. & S., and Burden's Best Iron. A. Norton & Sons' Steel. Keep constantly in stock a full assortment of Common and Refined Iron, Bagnall's Ulster, Burden's and H. B. & S. Iron. Bands, Rods, Hoops, Scrolls, Ovals, Half Ovals, and Half Rounds, Angle and Tee Iron, Beams and Channel Iron, Sheet and Plate Iron, Nail Rods, Norway Shapes, etc. Cast, Spring, Toe Calk, Tire, Sleigh Shoe and Plow Steel, etc., at lowest market rates.

JACKSON & CHACE,

206 & 208 Franklin St., N. Y.,

Importers and Dealers in

IRON and STEEL.



Agents for

JOHN A. GRISWOLD & CO'S

Bessemer Steel.

Agents for

UNION IRON MILLS,

Wrought Iron Beams,

ANGLE and T IRON.

Special Irons for Bridge and Architectural Work.

ABEEL BROTHERS,

Successors to JOHN H. ABEEL & CO.,

Iron Merchants,

190 South Street and 365 Water, N. Y.

ULSTER IRON

A full assortment of all sizes constantly on hand.

English and American Refined Iron of choicest brands.
Common Iron.
Band, Hoop and Scroll Iron.
Sheet Iron.
Norway Nail Rods.
Norway Shapes.
Cast, Spring and Tire Steel, etc.

Alfred R. Whitney,

Importer and Dealer in

IRON AND STEEL,

Well assorted stock of

Angle and T Iron,

To 30 feet in length, constantly on hand.

56, 58 & 60 Hudson, and 49, 51 & 53 Thomas Sts., N. Y.

English and American Manufacturers'

AGENT FOR IRON

Used in the Construction of

Fire-Proof Buildings, Bridges, &c.

Books containing Cuts of all Iron now made, sent by mail. Sample Pieces at office.
Please address 58 Hudson Street.

POWERVILLE

ROLLING MILL,

JOHN LEONARD, Proprietor,

450 & 451 West Street, NEW YORK.

Manufacturer of all sizes of **MERCHANT IRON and HOOPS.** Also Manufacturer of

Best Charcoal Scrap Blooms.

And Dealer in **Old and New Iron,**

Steam Engines, Boilers and Tanks.

A. B. Warner & Son,

IRON MERCHANTS,

28 & 29 West and 52 Washington Sts.

BOILER PLATE,

Boiler Tubes, Angle, Tee & Girder Iron, Boiler and Tank Rivets.

Sole Agents for the celebrated

"Eureka," Pennocks,

"Wawasset," Lukens,

Brands of Iron. Also all descriptions of Plate, Sheet and Gasometer Iron. Special attention to Locomotive Iron. Fire Box Iron a specialty.

ASBESTOS FELTING,

For Steam Boilers Pipes, &c.,

Saves 25 to 40 per cent. in fuel. The *best* in use *Durable* and *Economical.*

For circulars and prices, addres

DAVIDGE & WHEELER,

General Agents Asbestos Felting Co., of New York

P. O. Box, 4870. 781-2 Pine St., N. Y.

Iron.

NEW YORK.

Conklin & Huerstel,

Successors to M. W. DEAN,

"IRON MERCHANTS,"

99 Market Slip, N. Y.

Keep constantly on hand a full assortment of

English and American Refined Iron,

COMMON IRON,

Band, Hoop and Scroll Iron,

Norway Nail Rods and Shapes,

Cast, Spring, Toe Calk and Tire Steel.

Goods Shipped free of Cartage.

WM. GARDNER,

575 Grand, 414 Madison & 302 Monroe Sts.

Bar, Hoop, Rod, Band and Horse Shoe Iron.

AGENT FOR

Best Norway N. R. & Shapes,

Spring, Toe Calk, Tire & Sleigh Shoe Steel.

BORDEN & LOVELL,

Commission Merchants

70 & 71 West St.,

Wm. Borden, L. N. Lovell, — New York.

Agents for the sale of

Fall River Iron Co.'s Nails, Bands, Hoops & Rods,

AND

Borden Mining Company's Cumberland Coals.

GILEAD A. SMITH & CO.,

Bartholomew House, Bank, London. — No. 30 Pine St., N. Y. P. O. Box No. 5070.

RAIL ROAD IRON

In Ports of New York & New Orleans.

Steel Rails of most approved Makers.

Importers of Old Iron Rails for re-rolling.

Bills of Exchange on Imperial Bank, London.

Edward Page & Co.,

(Successors to Frykberg & Co.,)

Swedish & Norway Iron,

Boston Rolling Mill,

SHAPES, NAIL RODS AND WIRE RODS,

OFFICES:

17 Batterymarch Street, BOSTON,

22 William Street, NEW YORK,

205 1-2 Walnut Street, PHILA.

GOTHENBURG, SWEDEN.

Marshall Lefferts, Jr.,

94 Beekman St., New York,

MANUFACTURER OF

AMERICAN

Galvanized Sheet Irons

AND AGENT FOR THE

Easton Sheet Iron Works, Easton Pa.

MANUFACTURER OF

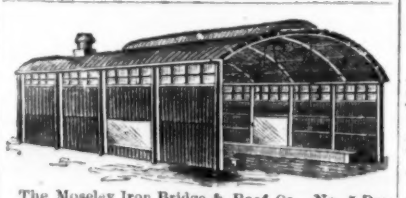
Best Bloom, Charcoal & Refined Sheet Iron.
Galvanized Telegraph and Fence Wire
Galvanized and Tinned Roofing and Slating Nails.
Galvanized Tea Kettles.
Galvanized Hoop Iron of all widths.
Galvanized Staples.
Corrugated Iron for Roofing, plain or gal'd.
Galvanized Bars and Chains for Cemetry Railing.

T. B. CODDINGTON & CO.,

25 & 27 Cliff St., New York.

Bar Iron, Sheet Iron, &c

Of every description



The Moseley Iron Bridge & Roof Co., No. 5 Dey St., N. Y. Wrought Iron Bridges, Corrugated Iron Roofs, Buildings, Doors, Shutters, Corrugated Iron, straight or curved. Also Manhattan Iron Roofing.

Iron.

NEW YORK.

BIGELOW & JOHNSTON,

Iron and Steel Rails,

PIG AND SCRAP IRON,

OLD RAILS.

48 Pine St., Rooms 9 and 10.

HAZARD & JONES,

BROKERS.

New and Old Rails,

FOREIGN AND DOMESTIC

Pig Iron,

Wrought & Cast Scrap Iron, &c.,

212 Pearl St., New York.

Geo. A. Boynton,

BROKER IN IRON

70 WALL ST, N.Y.

WILLIAM H. PETIT,

BROKER IN IRON,

72 Wall Street, N. Y.

JAMES WILLIAMSON & CO.,

SCOTCH AND AMERICAN

PIG IRON,

No. 69 Wall St., New York.

B. F. JUDSON,

SCOTCH AND AMERICAN

PIG IRON,

Wrought and Cast Scrap Iron.

457 and 459 WATER STREET,

And 235 SOUTH STREET, near Pike,

NEW YORK.

JOHN W. QUINCY,

98 William Street, New York

Dealer in

Anthracite & Charcoal Pig Irons,

OLD SCRAP and CUT NAILS.

Gibbs' Patent Lock Nut and Washer, and Fish Plates for Rail Roads.

BOONTON

CUT NAILS,

HOT PRESSED NUTS,

Machine Forged Bolts,

Washers.

Fuller, Lord & Co.,

BOONTON IRON WORKS,

139 Greenwich Street, New York.

Swedish Iron.

A Variety of Brands, including

UB G.F. ÆB SOF

BARS suitable for Steel of all grades, Wire, Shovels, Hoes, Scythes, Carriage Bolts, Nail Rods, Tacks, etc.

CHARCOAL PIG IRON for Bessemer and Car Wheels.

MUCK BARS for Steel Smelting and Re-rolling.

SCRAP or BAR ENDS.

Direct Agency for **N. M. HÖGLUND, of Stockholm,** represented in the United States by

NILS MITANDER,

69 William St., New York.

DANIEL W. RICHARDS & CO.,

Importers and Dealers.

SCRAP IRON,

Pig Iron,

OLD METALS.

YARDS:

88, 90, 92, 94, 96, 98, 100, 102 & 104 Mangin St.
And 71, 73,75 77 & 79 Tompkins St.

OFFICES,

92 Mangin Street,

178 Pearl Street, near Pine Street.

The Corrugated Metal Co.

D. F. Towner, *Prest. & Treas.* — East Berlin, Ct. — C. A. Roys, *Secy.* N. C. North, *Supt.*

MANUFACTURERS OF PATENT CORRUGATED FIRE-PROOF SHUTTERS, ROOFING, SIDING, LATH, CEILING, FLOORING, SHINGLES, &c.

Work in our line put up in all parts of the country, and guaranteed satisfaction.

Iron.

NEW YORK.

S. W. HOPKINS & CO.,

57 Broadway, New York.

WE BEG TO ANNOUNCE TO AMERICAN ROLLing Mills and Iron Manufacturers, that we are constantly receiving, from both American and Foreign Railroad Companies, heavy shipments of

OLD RAILS,

and are therefore always in a position to furnish to consumers any quantity desired for *immediate or remote* delivery: and when required will contract to supply Mills with their monthly or yearly consumption at the lowest current market prices. We are also prepared to receive orders for

SCRAP IRON,

both Wrought and Cast, of every description, and have always a supply at dock, and to arrive. Great care is taken in properly selecting and classifying the same by our

LONDON HOUSE,

58 Old Broad Street,

who give this department of our business their personal attention. When preferred, we are ready to execute orders from abroad at a sterling price, charging a commission for our services.

S. W. HOPKINS & CO.

HARRISON & GILLOON

IRON AND METAL DEALERS,

58, 560, 562 WATER ST. and 302, 304, 306 CHERRY ST., NEW YORK.

have on hand, and offer for sale, the following:

Scotch and American Pig Iron Wrought, Cast and Machinery Scrap Iron, Car Wheels, Axles and Heavy Wrought Iron; also old Copper, Composition, Brass, Lead Pewter Zinc, &c

---

JAMES T. MAGUIRE,

MANUFACTURER

Builders' Wrought Iron Goods,

HOOKS HASPS AND STAPLES,

Awning Hooks, Corner Irons, Rings, Tent Hooks, Horse S. Pincers, Tongs, &c.

See Price List.

Messrs. WM. F. SHATTUCK, & CO., 115 Chambers Street, Agents, &c.

Manufactory, 606 E. 11th St., New York.

OXFORD IRON CO.,

Cut Nails and Spikes,

R. R. Spikes, Splice Bars and Nuts and Bolts,

81, 83 & 85 Washington, near Rector St, N. Y.

COLLIER & SCRANTON, Agents.

DAVID CARPENTER,

Manufacturer of

HOT PRESSED NUTS,

And Dealer in

All kinds of Refined Bar & Horse Shoe Iron,

402 Water Street, New York.

THE SPRINGFIELD IRON COMP'Y,

SPRINGFIELD, ILLINOIS,

Is now ready to receive orders for the manufacture of

IRON RAILS,

Of a quality second to none.

Capacity of Works, 25,000 tons per annum.

Chas. Ridgely, Prest. J. W. Bunn, Vice Prest
George M. Brinkerhoff, Secy
E. A. Richardson, Supt
Agent in New York,

GEORGE T. M. DAVIS, 47 Exchange Place.

BURDEN'S

HORSE SHOES.

"Burden Best" Iron.

Boiler Rivets.

Burden Iron Works, H. Burden & Sons, Troy, N. Y.

Established in 1849.

THE

Jackson & Woodin Mfg. Co.

Successors to JACKSON & WOODIN,

Manufacturers of

Car Wheels and Cars,

BERWICK,

COLUMBIA, CO., PA.

Iron.

PITTSBURGH.

Pittsburgh Foundry.

A. GARRISON & CO.,

Manufacturers of

CHILLED AND SAND ROLLS,

Of acknowledged superior quality, at the lowest current prices.

Ore and Clay Crushers, and Rolling Mill Castings,

of every description.

Office and Warehouse, 209 Liberty Street.
PITTSBURGH, PA.

REESE & CO.,

Manufacturers of

CORRUGATED SHEET IRON,

PLAIN AND GALVANIZED.

PITTSBURGH PA.,

PENNSYLVANIA IRON WORKS.

EVERSON, GRAFF & MACRUM.

Pittsburgh, Pa.,

Manufacturers of every description of

Bar, Sheet and Small Iron,

Make a specialty in

Fine and Common Sheet Iron.

AMERICAN IRON WORKS.

Jones & Laughlins,

Manufacturers of

Bar Plate and Sheet Iron,

Nails, Ship and Railroad Spikes, RR. Splice Bars and Bolts,

Celebrated Cold-Rolled Shafting, Piston Rods, &c.

PITTSBURGH, PA.,

40 42 and 44 River Street CHICAGO.

Stocks of Cold-Rolled shafting in store and for sale by Messrs. FULLER, DANA & FITZ, Boston, Mass. Messrs GEORGE PLACE & CO., New York. Messrs. PEIRCE & WHALING, Milwaukee, Wis.

SOLAR

IRON WORKS.

Wm. Clark & Co.

MANUFACTURERS OF

HOOP, BAND

AND

SCROLL IRON

Railroad St., above 33d,

PITTSBURGH PA.

W. P. TOWNSEND & CO.,

Manufacturers of

WIRE and Black and Tinned Rivets

OF CHOICEST CHARCOAL IRON.

Rivets any diameter up to 7-16inch and ANY LENGTH required.

19 & 21 Market St., PITTSBURGH PA.

Boston Rolling Mill

Manufacture extra quality small Rods, from best selected Scrap Iron.

Swedish and Norway Shapes,

NAIL and WIRE RODS.

Also HORSE SHOE IRON.

W. R. ELLIS & CO., Proprietors,

Office, 17 Batterymarch St., Boston.

"PEMBROKE"

Round, Square & Flat Iron.

"FRANCONIA" Shafting & Bar Iron.

Extra quality when great strain or superior finish is required. Also, Irons for ordinary work, like the "ENGLISH REFINED."

WM. E. COFFIN & CO.,

No. 8 Oliver Street, Boston.

HALL, KIMBARK & CO.,

IRON,

STEEL, NAILS, HEAVY HARDWARE.

80, 82 & 84 Michigan Ave., Chicago.

LYNCHBURG IRON WORKS,

F. B. DEANE, Jr., & SON, Proprietors,

LYNCHBURG, VA.,

MANUFACTURE

RAILROAD, BOAT & COUNTERSUNK HEAD SPIKES FISH PLATES & BOLTS,

Bridge Rods, Hexagon, Square, T and Button Head Bolts, Bolt Ends, Rivets, Car Wheels from best Cold Blast Charcoal Iron. Locomotive, Car, Engine and Bridge Castings, Chilled Rolls, Rolling Mill and Blast Furnace Castings.

THE
ARCTIC
FREEZER.

SIMPLEST.

QUICKEST.

BEST.

Send for Price List.

E. S. & J. TORREY,
166 Fulton Street, New York,

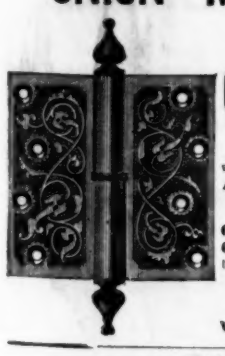
W. & B. DOUGLAS,
MIDDLETOWN, CONN.
The Oldest and Most Extensive Manufacturers of
PUMPS,
HYDRAULIC RAMS,
GARDEN ENGINES
AND OTHER
Hydraulic Machines
IN THE
UNITED STATES.

Several Hundred Kinds, Styles and Varieties of these Articles in Large Stock, constantly on hand.

Highest Medal awarded them by the Universal Exposition, at Paris, France, in 1867.
Descriptive Catalogues and Price Lists sent when requested.

BRANCH WAREHOUSES,
85 & 87 John Street, NEW YORK.
AND
197 Lake St., CHICAGO, Ill.

UNION MANUFACTURING COMPANY,
Manufacturers of all styles
PLAIN AND ORNAMENTAL



Cast, Fast & Loose Butts,
Drilled and Wire Jointed.
Japanned, Figured Enameled, Nickle Plated, with and without Cap, and Real Bronze Butts.
Also, a full line of
IRON PUMPS,
Cistern, Pitcher Spout, Suction and Force, Yard, Garden, Engine Yard, Drive Well, &c., and all with the most modern improvements.

☞ Fine Castings a Specialty.
NEW BRITAIN, CONN.
Warehouse, 55 Chambers Street, NEW YORK.

THE LARGEST
PUMP WORKS,
IN THE WORLD.
Oven 800 different styles
Pumps, Steam Pumps, Rotary Pumps, Centrifugal Pumps, Piston Pumps,
for Tanners, Paper Mills, Fire Purposes, suitable for all situations imaginable. Send for Catalogue. Address
RUMSEY & CO.,
SENECA FALLS, N. Y.
ALSO, FOR
Hand Fire Engines,
Address RUMSEY & CO., Seneca Falls, N. Y., U. S. A.

WRIGHT'S
Double Acting,
BUCKET - PLUNGER
STEAM PUMPS.
ALWAYS RELIABLE
VALLEY MACHINE CO., Easthampton, Mass

Woodward Steam Pump Mfg. Co,
Steam Pump and Fire Engine,
—AND—
Steam, Water and Gas Fitting of all Kinds.
Also, Wholesale and Retail dealers in WROUGHT IRON PIPE, BOILER TUBES, etc.
Woodward Building, Nos. 76 & 78 Centre St., corner Worth Street, NEW YORK.
GEO. M. WOODWARD, Pres't.

"Metallum Martes."

(CONDLUDED.)

Although the Author hath not as yet so fully perfected or raised his invention, to the quantity of Charcole Iron Furnaces, yet the Authors quantity being but seven Tuns per week at the most, together with the quality of his Iron made with Pit-cole and Sea-cole, hath the most eminent Triplicity of Iron of all that can be desired in any new Invention.

1. More Sufficient. 2. More Cheap. 3. More Excellent.

Upon which triplicity, the Authour might enlarge himself, but shall not be tedious, only give me leave to mention that there be three sorts of Cast Iron;

1. The first sort is Gray Iron.

2. The second sort is called Motley Iron, of which one part of the Sowes or Piggs is gray, the other part is white intermixt.

3. The third sort is called white Iron, this is almost as white as Bell-Mettle, but in the Furnace is least fined, and the most Terres-trial; of the three, the Motley Iron is somewhat more fined, but the Gray Iron, is most fined, and more sufficient to make Bar Iron with, and tough Iron to make Ordnance, or any Cast Vessels, being it is more fined in the Furnace, and more malliable and tough, then the other two sorts before mentioned; and of this sort, is the Iron made with Pit-cole, Sea-cole for the most part, and therefore more sufficiently to be preferred.

2. More cheaper Iron there cannot be made, for the Author did sell pigg or cast Iron made with Pit-cole at four pounds per Tun, many Tuns in the twentieth year of King James, with good profit; of late, Charcole Pig iron hath been sold at six pounds per Tun, vea at seven pounds per Tun hath much been sold.

Also the Author did sell Bar-iron Good and Merchantable, at twelve pounds per Tun, and under, but since Bar-iron hath been sold for the most part ever since at 15*l*. 16*l*. 17*l*. and 18*l*. per Tun, by Charcole Iron-Masters.

3. More Excellent for diverse Reasons, and principally, being the meanes whereby the Wood and Timber of this Island almost exhausted, may be timely preserved yet, and vegetate and grow again unto his former wonted cheapness, for the maintainance of Navigation, which is the greatest Strength of Great Brittain, whose Defence and Offence for all the Territories that belong unto it, next under God and his Vice-Gerent, our Sacred Majesties Cares, consists most of Shiping, Men of War, Experienced Mariners, Ordnances, Ammunition, and Stores, the Ordnance made therewith will be more gray and tough, therefore more serviceable at Sea and Land, and the Bar-iron will wall, rivet, and hold better then most commonly Charcole Iron.

2. More Excellent, not onely in respect the Invention of making of Iron with Pit cole and Sea-cole will preserve Wood and Timber of Great Brittain so greatly consumed by Iron-Works of late.

But also in respect, this my Invention will preserve many Millions of Tuns of Small-cole in Great Brittain, which will be lost in time to come, as formerly they were, for within ten miles of Dudley Castle, is annually consumed four or five thousand Tuns at least of small Pit-cole, and have been so consumed time out of mind under ground, fit to have it made Pit-iron with; which coles are and (unless Iron be made therewith) will be forever totally and annually lost; if four or five thousand Tun of Cole be consumed within ten miles compass, what Coles is thus consumed in all England, Scotland, and Wales! which is no good Husbandry for Great Brittain, hinc ille lacrime, that our Timber is exhausted.

Must I be still opposed, and never enjoy my Inventions, nor Great Brittain the Benefit?

Must my Pattent be obstructed in Peace, as it was extinct by the Wars?

And must not my Pattent be Revived for the making of Iron with Pit-cole, Sea-cole, Peat, and Turf, but find Enemies still to oppose it?

How many thousand Tuns of Iron might have been made but since my first Invention, An. Jacob. 18th by my means with Pit-cole, and Sea cole (lost) if I had not had Enemies; and had not wood and timber been preserved?

But most men will aver, that it doth concern the Author to Demonstrate the great losse mentioned formerly of Pit-cole annually;

It is thus,

There is at least within ten miles of the Castle of Dudley, twelve or fourteen Cole-Works, some in Worcester, and some of them in Staffordshire (now in work, and twice as many in that Circuit not in work) each of which Works get two thousand Tun of Cole yearly, some get three, four or five thousand Tun of Coles yearly; and the uppermost or top measures of Coles are ten, eleven, and some twelve yards thick; the Coles Ascending, Basseting, or as the Colliers term it, Cropping up even unto the superfices of the Earth, and there the Colliers formerly got the Coles; but where the Coles is deep and but little Earth upon the measures of Coles, there the Colliers rid off the Earth, and dig the Coles under their feet; these Works are called Foot-rids.

But of these Works there are now but few, some of these small Coles in these open Works, the poor people did carry away, but paid nothing for them in former times, termed the Brain Carriages.

But now the Colliers working more in the deep of these Works, they are constrained to sink Pits some of which Pits are from eight unto twenty yards deep, and some are near twenty fathome deep, which fathome contains two yards.

In these Pits, after you have made or hit the uppermost measures of Cole, and sink or digged thorow them, the Colliers getting the nethermost part of the Coles first, about two yards in height or more, and when they have wrought the Crutes or Staules, (as some Colliers call them) as broad and as far in under the ground, as they think fit, they throw the small Coles (fit to make Iron) out of their way on heaps to raise them up so high, to stand upon, that they may, with the working of their Picks or Maundrills over their heads, and at the one end of the Coles so far in as their Tool will permit, and so high as their working cometh unto a parting in the measure of Cole, the which Coles, to the parting by his self-clogging and ponderous weight, fall often many Tuns of coles, many yards high down at once; with which fall and the Colliers breaking of the said Cole, many small coles do so abound of no use, and fit for no sale; that in getting of twenty thousand Tun of Pit-cole, one half near is small cole, not drawn out of the Pits, but destroyed, left, and lost; which small cole, with the sleck thrown moyst together, (heat the sooner) and by means of its sulphurousness fire in the Pits, to no small prejudice unto the Owners of the Works, and the Workmen, besides Great Brittains loss; which Cole might have made many thousand Tuns of Iron, and also have preserved this Islands Woods and Timber; I might here give you the names, and partly the nature of every measure, or parting of each cole lying upon each other; the three uppermost measures are called the white measures for his white Arcenical, Salsuginos and Sulphurious substance which is in that Cole; the next measure, is the shoulder-cole, the toe-cole, the foot-cole, the yard-cole, the slipper-cole, the sawyer-cole, and the frisly-cole, these last three coles are the best for the making of Iron, yet other coles may be made use of.

I might give you other names of coles, but desire not prolixity, yet must I tell you of a supernumary number of Smiths within ten miles of these Cole Works near twenty thousand; yet God of his Infinite goodness (if we will but take notice of his goodness unto this Nation) hath made this Country a very Granary for the supplying these Men with Iron, Cole, and Lime made with cole, which hath much supplyed these men with Corn also of late, and from these men, a great part not only of this Island, but also of his Majesties other Kingdomes and Territories with Iron wares have their supply, and wood in these parts almost exhausted, although it were of late a mighty wood-land Country.

Now if the Coles and Iron-stone so abounding were made right use of, we need not want Iron as we do; for very many measures of iron-stone are placed together under the great ten yards thickness of cole, and upon another thickness of coles two yards thick, not yet mentioned, called the bottom-cole, or the heathen cole, as if God had decreed the time when, and how these Smiths should be supplyed, and this Island also with Iron, and most especially, that this cole and iron-stone, should give the first, and just occasion for the invention of the making of iron with pit-cole, no place being so fit for the invention to be perfected in, then this Country, for the general good; whose Woods did formerly abound in Forrests, Chases, Parks and Woods, but exhausted in these parts.

Now for the names of the iron-stone, the first measure is called the Black-row-graines, lying in very hard and black Earth.

The second measure is the Dun-row-graines, lying in dun earth or clay.

The third measure is called the white row grains, lying in very white Earth or Clay; under these three measure are sundry other measures, and are called, first, the Rider Stone; secondly, the Cloud Stone; thirdly, the bottom Stone; fourthly, the Cannock or Connatstone, which last may wel be so caled (although all the other measures be very good) yet this Stone is so Sulphurious and Terrestrial, not fit to make Iron; because the Iron thereof made is very Redshare, which is that if a workman should Draw or Forge out a Share mould fit for a Plough in that red heat, it would crack and not be fit for the Use of the Husbandmans Plough or Share. I may take occasion here to speak of the Nature of Coldshare Iron, which is so brittle if made of the grain Oare or Iron stone would be almost as brittle as some Regulus Antimonii made Iron, for with one small blow over an Anvil you may break the biggest Bar that is, if it be perfect coldshare Iron; nay the Plough-man often breaks his Share point off if it be made of coldshare Iron. But perfect tough malliable Iron will not break feisibly in hot-heat or cold, as coldshare wil, or red hot as Sulphurious veneriated redshare Iron will; but yet tough enough when it is cold: All which aforesaid qualities of Iron the Authour very well knoweth how to mend their Natures, by finning or setting the finery, lesse transhaw more borrow which are terms of art, and by altering and pitching the works, and plates, the fore spirit-plat, the tuiron, bottome, back and breast or fore-plate, by the altering of which much may be done, if the work be set transhaw and transiring from the blast, the Iron is more coldshare lesse Fined, more to the Masters profit; lesse profitable to him that makes it into manufactorage, and lesse profitable to him that useth it; but the Iron made in a Burrow work, becometh more tough and serviceable; yet the nature of all Iron stone, is to be considered, both in the Furnace, and in the finery, that the Sulphurious Arceniall and Veneriating qualities, which are oftentimes in Ironstone be made to separate, in both the works from the fixed and fixing bodies of Iron, whose fiery quality is such, that he will sooner self calfine than separate from any Sulphurious veneriated quality.

No man, I hope, need to be offended at any terms of Art, it hath been alwayes lawfull for Authours of new Arts and Inventions, at their own pleasures, to give name to their new Inventions and Arts, every Tradesman is allowed it in his mystery.

But the Authour hath as much as he could avoided the terms of Art that Simon Sturtenante and others have used, which are very many: onely the Authour hath given you the common names and terms (for the most part) which are so common among Forge-men and Founders, as is nothing more common; but kept secret amongst them and a mystery not yet known, but unto very few Owners of Iron-works; nay I have not yet troubled your memory with any of the Founder terms, of but making his harth as the Timpe stones, the Wind-wall stones, the Furion stones, the Botton-stone, the Back-stones and the Boshes, in the making and pitching of which harth, is much of the Mystery.

I must confesse, there is given unto some Phylosophers, etc filii Artis, some few terms how the Sulphurious Arsenicall, Bituminos, Antimoniall, Venerial, and other poysonous qualities, either in the Pit-cole, Sea-cole, or the Iron-stone, may be in part at the Furnace separated, and not be permitted to incorporate in the Iron, and if it be incorporated, yet by Fining at the Forge, to fetch it out; also to melt extract, refine, and reduce all mines mettals and minerals, unto their species with Pit-cole, Sea-cole, Peat, and Turff, by wayes not yet in use, which the Authour will make known, hereafter, if God permit him health, time and space, or leave his knowledg unto his Brother Aylmore Folliott, Esq; his Nephew Parks house, Esq; and to his Kinsman Master Francis Dingley, to declare unto this latter Age of the World, in which God is pleased to manifest many of his Secrets; Qui vult secreta scire, secreta secrete sciat custodire.

Having suffered much, ever since the year 1618. unto this present for the general good, as by the preceding discourse appears for the making of Iron with Pitcole, Seacole, Peat and Turff; for the preservation of Wood & Timber of Great Britain so much exhausted, for the future prevention of which,

Is first, to permit the Authour to enjoy His Pattent, and fully to perfect his said Inventions (obstructed in the Reign both of King James and in the Reign of his Sacred Majesty King Charls the First, of ever Blessed Memory; and lately since his most Sacred Majesties happy Restauration) who desires nothing but to be animated with the Patent revived according unto the Statutes of 21. Iacob for Inventors.

Secondly, to impower the Authour or any other Agents to take care that no Pit-cole, or Seacole be any wayes wilfully destroyed under ground.

Thirdly, To put all former good Laws in Execution, and to make others for the preservation of Wood and Timber of these Nations, especially near Navigable River or Seas.

Fourthly, Seeing there goeth out of England, Scotland and Wales, many thousand Tons Annually of Pitcole and Seacole to furnish France, and also the Smiths thereof Spaine, Portugal and Flanders, and especially the Smiths thereof; the Low-Countries and the Smiths thereof; besides the Hollanders carries great quantics of our Coles unto Foreigne parts, without which those Countries cannot subsist: Now the Author desire is, that where there is a conveniency of Iron stone or Ewre, the Coles may not be transported (paying His Sacred Majesties Duty) until Order from His Majesty or his Privy Council.

Fifthly, That no Pitcole be Exported, seeing that Wood fuell and Timber is decayed for Buildings, and instead thereof Brickmaking (formerly spending Wood, but now coles) is much in use; also is Glasse now made with cole, but formerly were there many Thousand Loads of Wood fuell spent in the making thereof, and the Glass Invention with Pitcole was first effected near the Authours Dwelling.

Sixthly, Making of Steel, Brewings, making of Coppras, Allum, Salt, casting of Brasse and Copper, Dyings, and many other Works were not many years since done altogether with the Fuell of Wood and Charcole; instead whereof, Pitcole, and Seacole is now used as Effectually, and to a far better Use and Purpose; besides the preservation of Wood and Timber.

Seventhly, That which is somewhat neerer the mark and Invention; the Blacksmith forged all his Iron with Charcole, and in some places where they are cheap, they continue this course still, but small Pitcole and Seacole, and also Peat and Turff hath and doth serve the turn as well and sufficiently as Charcole.

Eighthly, That which is nearest, and my perfect Invention, and near the Authours Dwelling, called Greens-lodge, there are four Forges, namely, Greens-forge, Swin-forge, Heath-forge and Cradley-forge.

Which Four Forges have Barred all or most part of their Iron with Pitcole ever since the Authors first Invention, 1618. which hath preserved much Wood: In these Four, besides many other Forges do the like; yet the Authour hath had no benefit thereby to this present.

Yet by this Barring of Iron with Pit-cole 30,000 loads of Wood and more have been preserved for the general good, which otherwayes must have been had and consumed.

Symon Sturtevant, in his Metallica, in the Epistle to the Reader, saith, That there was then Anno 12. Jacobi in England, Scotland, Ireland and Wales 800 Furnaces Forges, or Iron Mills making Iron with Charcoal: Now we may suppose at least 300 of these to be Furnaces, and 500 to be Forges; and each Furnace making fifteen Tun per Week of Pig or cast Iron, and work or blow but Forty week per Annum, but some Furnaces make Twenty Tuns of Pig Iron per Week, and two Loads of Charcole or there about, go to the making of a Tun of Pig Iron: And two Loads (or two cords) of Wood at the least, go to the making of a Load of Charcole.

Now what Loads of Wood or Charcole is spent in great Brittain and Ireland Annually? but in one Furnace, that makes Fifteen Tun per Week of Pig-Iron for Forty weeks: I shall give you the Table, and leave you to judge of the rest of the Furnaces.

15. Tun per week spends of	Charcole, Wood, 30 loads 60 loads
Per Annum 40 weeks spends	1200 2400 loads.

Also for one Forge that make Three Tuns of Bar Iron weekly for Fifty weeks, but some Forges make double my Proportion, and spend to Fine and Bar out each Tun three Loads of Coles:

3 Tun per week	Charcole	To each Tun. Wood
	9 Loads	18 loads
Per Annum	450 loads	900 loads

By these examples, may you see, the vast quantities of Charcole, or Wood, that the 300 Furnacis spend weekly, or yearly, and the 500. Forges workings all the year, spend little lesse then the Furnaces: It being impossible, after this rate for Great Brittain or Ireland, to supply these her works with Charcole in Fining of Iron at the Fineries, yet the Forges that need but half the Charcole may be permitted to use Charcole, and may be supplyed with under Woods.

Let us but look back unto the making of Iron, by our Ancestors, in foot blasts, or bloomenies, that was by men treading of the Bellows, by which way they could make but one little lump or bloom of iron in a day, not 100 weight, and that not fusible, nor fined, or malliable, untill it were long burned and wrought under Hammers, and whose first slag, sinder or scorius, doth contain in it as much, or more Iron, then in that day the workman or bloomer got out, which Slag, Scorius, or Sinder is by our Founders at Furnaces wrought again, and found to contain much Yron and easier of Fusion than any Yron stone or Mine of Yron whatsoever of which slag and Sinders, there is in many Countryes Millions of Tuns and Oaks growing upon them, very old and rotten.

The next invention was to set up the Bloomeries that went by water, for the ease of the men treading the bellows, which being bigger, and the waterwheel causing a greater blast, did not onely make a greater quantity of iron, but also extracted more iron out of the slag or sinder, and left them more poorer of iron then the foot-blasts, so that the Founders cannot melt them again, as they do the foot blast sinders to profit: Yet these Bloomeries by water (not altogether out of use) do make in one day but two hundred pound weight of iron, or there abouts neither is it fusible, or malliable, but is unfined until it be much burned, and wrought a second time in fire.

But some of the now going Furnaces with Charcole, do make two or three Tun of Pigg or cast iron in 24 hours.

Therefore I do not wholly compute the vast quantities of charcoles and wood spent in these voragious works, which quantity of cast iron, with pit-cole and Sea-cole, at one Furnace I desire not, but am contented with half the proportion, which once I attained unto before my Bellows were riotously cut, that is one Tun in 24 hours; we need not a greater quantity, if the like quantity were made in Furnaces in Scotland, and Wales, which abounds with Pit-cole and Sea-cole, as well as England; and our supernumery Smiths, Founders, and Forgemen, and other Tradesmen might be there imployed, thereby to furnish His Majesties Plantations, as well, if not better then England, where Coles are far cheaper then in England.

Although vast quantities of Coles do abound near the Authors dwelling, yet twenty thousand Smiths or Naylors at the least dwelling near these parts, and taking of Prentices, have made their Trade so bad, that many of them are ready to starve and steal; so that it is wished there were some courses taken to mend their Trade, imploy them in other parts, or permit them, not to take so many Prentices, all which have great occasions to use Pit-cole, and had not these parts abounded with cole, it would have been a great deal worse with them then it is; but of the cole there is, nor will be any want, nor of iron-stone.

The manner of the cole-veins, or measures in these parts, and also of the measures of iron-stone, or mines, how they lye, be, or increase, some veins lye circuler, some semi-circuler, some ovall, some works almost in a direct line, and some works parts of a Circle; as by the Circle, it being onely for a small Example to judge the rest of the Mines by may appear,

Iron.

Atwater, Wheeler & Co.,

New Haven, Conn.,

IRON MERCHANTS

AND

Manufacturers.

Manufacture in their New Haven Mill, or import through their Liverpool House, all grades of

Merchant Iron

ALSO

Scrap Iron, Wire Rods, Tin Plate, &c.

And invite correspondence with close buyers in all parts of the country.

☞Freight from New Haven to all points West and South same as from New York.

CLEVELAND.

Cleveland Rolling Mill Company,

MANUFACTURERS OF

BESSEMER STEEL RAILS,

Steel Plates and Forgings, Railroad Iron, Merchant Bar, Beams, Girders, Splices, Bolts, Spikes, &c., &c.

Office, Nos. 99 & 101 Water St., **CLEVELAND, O.**

A. P. STONE, Pres. H. CHISHOLM, V. P. & Gen. Supt. E. S. PAGE, Sec'y.

Cleveland, Brown & Co.

IMPORTERS, MANUFACTURERS AND DEALERS IN

IRON AND STEEL,

HORSE SHOES, HORSE NAILS, NORWAY NAIL RODS,

NAILS, SPIKES,

"Standard Taper" Axles & Swedes Iron.

WINDOW GLASS.

Wrought Iron Pipe and Boiler Tubes

Chains, Rivets, Nuts, Washers, and Heav Hardware Generally.

25, 27, 29 & 31 Merwin Street, CLEVELAND, OHIO.

ENTERPRISE IRON WORKS.

Cartwright, McCurdy & Co.

MANUFACTURERS OF

Cotton Tie, Trunk & Woodenware

HOOP IRON,

Band, Scroll and Bar Iron.

General Office & Warehouse, **CLEVELAND, O.**

Works at **Youngstown, O.**

Niles Iron Co.,

Manufacturers of

Bar & Sheet Iron,

NILES, OHIO.

L. G. ANDREWS, President.
L. E. COCHRAN, Sec'y. & Treas.
S. E. BROWN, Gen'l Supt.

OLD DOMINION

Iron and Nail Works Company,

RICHMOND, VA.,

R. E. BLANKENSHIP, Commercial Agent,

Manufacture

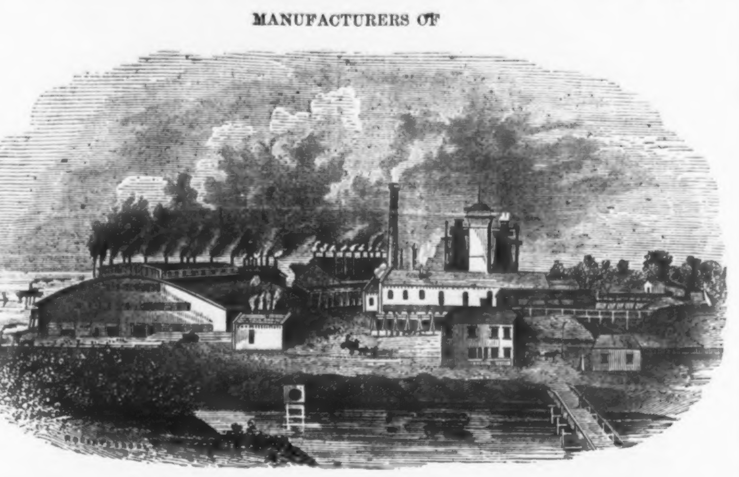
NAILS AND BAR IRON,

Bands, Scrolls, Horse Shoe Bars, Nut and Rivet Iron, Spike Rods, Shafting, Bridge Bolts, Ovals, Half Ovals, Half Rounds, &c.

Iron.

MILWAUKEE IRON CO.,

MANUFACTURERS OF



RAILROAD IRON

of Unsurpassed Excellence.

Capacity of Works, 45,000 Tons of Rails per Annum.

E. B. WARD, Prest. ALEX. MITCHELL, Treas. J. J. HAGERMAN, Secy. & Agent.

MILWAUKEE, WIS.

PHILADELPHIA.

Iron and Steel T and Street Rails

Of Best American and English Makes.

CHAIRS, SPIKES, FISH BARS, RAILROAD SUPPLIES.

Muck Bars, OLD RAILS, Scrap, BLOOMS.

American and Scotch

PIG IRON, AND METALS.

CHAS. W. MATTHEWS,

133 Walnut St., Phila.

[Late RALSTON & MATTHEWS, 133 Walnut St.]

MALIN BROS.,

IRON

Commission Merchants,

No. 228 Dock Street,

3d door below Walnut, PHILADELPHIA.

BLAKISTON & COX,

IRON

Commission Merchants,

No. 333 Walnut Street,

PHILADELPHIA.

CAMBRIA

IRON COMPANY,

JOHNSTOWN, PA.

This Company, by mining the raw materials and manufacturing the pig metal from a mixture of the most suitable ores in their own blast furnaces, situated on both sides of the Alleghany mountains, are enabled to obtain the various kinds of iron best adapted for the different parts of a rail. Doing their own machine work and repairs, and rolling the rail way bars with the latest improved machinery they produce

RAILS

of an unsurpassed excellence of quality at the lowest market rates. The long experience of the present managers of the Company, and the enviable reputation they have established for "CAMBRIA RAILS," are deemed a sufficient guarantee that purchasers can at all times, depend upon receiving rails unsurpassed for strength and wear by any others of American or foreign make. Any of the usual patterns of iron rails can be supplied on short notice, and new paterns of desirable weight or design will be made to order The Company are also preparing to manufacture Steel Rails by the Pneumatic process. Address

CAMBRIA IRON COMPANY

218 S. Fourth St., PHILADELPHIA

or at the works, JOHNSTOWN, PA.

S. FULTON & CO.,

MANUFACTURERS OF

Pig Iron and Cast Iron Gas and Water Pipes.

ALSO HEAVY AND LIGHT CASTINGS

OF EVERY DESCRIPTION.

PLYMOUTH IRON WORKS, CONSHOHOCKEN, PA.

Office, No. 412 Walnut St., Phila.

SAMUEL FULTON. THEO. TREWENDT

DANIEL L. TOWER,

Malleable & Gray Iron Castings,

ELIZABETHPORT, N. J.

Malleable Iron Castings, either from Cupola or Air Furnaces.

N. Y. Office, 20 Cortlandt Street.

PHILADELPHIA.

The Phœnix Iron Co.,

410 Walnut St., Philadelphia.

MANUFACTURERS OF

CURVED, STRAIGHT AND HIPPED

Wrought Iron Roof Trusses

BEAMS, GIRDERS, AND JOISTS,

and all kinds of Iron Framing used in the construction of Iron Proof Buildings.

Deck Beams, Channel, Angle and T Bars

curved to template, largely used in the construction of Iron Vessels.

Pat. Wrought Iron Columns, Weldless Eye Bars,

for Top and Bottom Chords of Bridges.

Railroad Iron, Street Rails, Rail Joints and Wrought Iron Chairs.

Refined Bar, Shafting, and every variety of Shape Iron made to order.

Plans and Specifications furnished. Address

SAMUEL J. REEVES Vice Pres.

George Buchanan.

(Established 1853.)

Exporter of

OLD RAILS,

IRON AND STEEL RAILS, PIG IRON,

Machinery of every description.

19 BIRCHIN LANE, LONDON, ENGLAND.

Bankers—Messrs. Barclay, Bevan, Tritton, Twells & Co., 54 Lombard Street, London.

John E. Swan & Brothers,

Exporters of

Scotch & English Pig Iron,

Glasgow & Middlesbrough.

ELIZABETH IRON CO.

MANUFACTURERS OF

Merchant Bars and **Fish Plates,**

ELIZABETHPORT, N. J.

E. M. DUNN, Supt. & Treas.

Artistic & Enduring

MONUMENTS,

IN GRANITE AND BRONZE.

Designs remitted by Mail.

National Fine Art Foundry

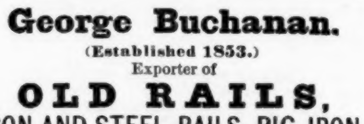
218 East 25th Street, New York.

R. D. WOOD & CO.,

PHILADELPHIA,

Manufacturers of

Cast Iron Water and Gas Pipe, Lamp Posts, Retorts, &c.



Also, Race & Mathews' **Patent Hydrant.** This Hydrant is perfectly anti-freezing, is the most ornamental and the cheapest made.

R. PAINE, Selling Agent, Office, 173 Broadway, N. Y.

Iron.

CAST IRON **FLANGE PIPES**

Of any length or diameter, for Steam Engines, Exhaust Steam, Fire Purposes, Refineries, both Faced and Drilled and Plain. Also,

GAS and WATER PIPES

Of all sizes, with necessary connections for same.

LAMP POSTS, FIRE HYDRANTS, VALVES, &c.

R. A. BRICK & CO., Mfrs., 89 White St., N. Y.

METALS.

THOMAS J. POPE & BRO.,

292 Pearl Street, NEW YORK,

PIG IRON---Scotch and American,

Ingot Copper, Spelter, Nickel,

AND METALS GENERALLY.

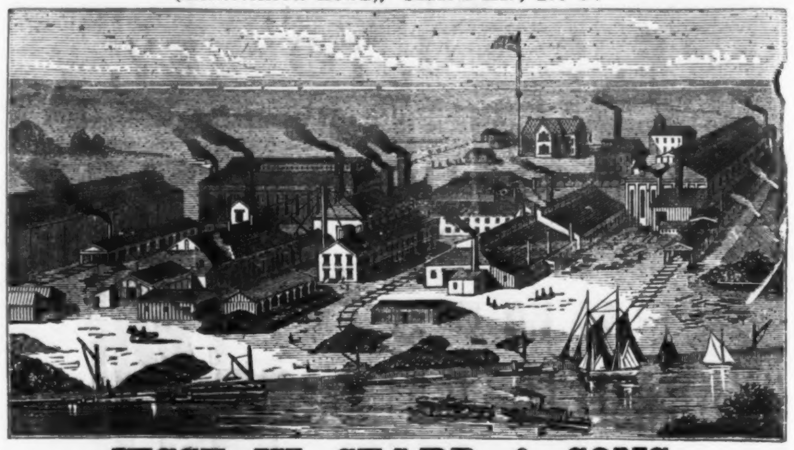
OLD RAILS, SCRAP IRON, &c

Consignments Solicited on fair Advances.

JESSE W. STARR. BENJ A. STARR. BENJ. F. ARCHER.

CAMDEN IRON WORKS

(Established 1824), CAMDEN, N. J.



JESSE W. STARR & SONS,

Engineers, Contractors and Manufacturers of Gas Apparatus.

And all the

Buildings, Tanks, Holders, &c., required for the Manufacture, Purification, and Storag of Gas, and Street Mains Requisite for its Distribution.

Plans, Drawings, and Specifications promptly furnished.

IRON FOUNDERS.

CAST IRON STREET MAINS, for Water and Gas, from One and a Half Inches to FORTY-EIGHT Inches in Diameter.

Stop Valves (all sizes), FIRE HYDRANTS, HEATING PIPES, BRANCHES, BENDS, TEES CASTINGS of any form or size required.

PHILADELPHIA OFFICE. - - 403 WALNUT STREET.

JOLIET IRON & STEEL CO.,

Joliet, Ills.,

MANUFACTURERS OF

PIG METAL, RAILROAD IRON,

And Bessemer Steel Rails.

Office, 94 Washington Street, CHICAGO.

A. B. MEEKER, President. *J. H. WRENN, Sec'y and Treas.*

TAYLOR IRON WORKS,

HIGH BRIDGE, N. J.,

WHEELS AND AXLES made in the best and most careful manner, furnished separately, or "fitted," making complete sets.

On the line of the Central Railroad of New Jersey.

CAR WHEELS, CAR AXLES,

DRAW HOOKS & FORGINGS.

LEWIS H. TAYLOR, President.

W. J. TAYLOR, Treas. & Gen. Man., JAS. H. WALKER, Secretary. | S. P. RABER, Supt. EDW'D L. BROWN, General Agent.

New York Office, 93 Liberty St.

STANDARD DRAW HOOKS, finished, ready for immediate use, with nuts and plates, with or without links.

ATKINS BROTHERS,

PROPRIETORS OF THE

Pottsville Rolling Mills & Pioneer Furnaces

POTTSVILLE, PENNSYLVANIA.

Having introduced New and Improved Machinery into their Rolling Mills, and manufacturing all their Iron from the ore, and also doing all Machine Work and Repairs in their own shops, they are enabled to produce

RAILROAD IRON

Of uniform quality, unsurpassed for strength and wear, and of any required length. Address the Proprietors, Pottsville, Pa.

The Britannia Ironworks Company, Limited,

Middlesbro' England,

MANUFACTURERS OF

ALL DESCRIPTIONS OF IRON RAILS,

Surplus Stocks of Various Sections always on hand.

London Office: W. G. FOSSICK, 6 Laurence Pountney Hill, E. C.

Weekly Output, One Thousand Tons.

NEW HAVEN

Rolling Mill Comp'y

Manufacturers of Merchant, Horse Shoe, and extra quality Iron. Guaranteed to stand specified tests. Special orders taken for common Iron.

New Haven, CONN.

BONNELL, BOTSFORD & CO.,

Youngstown, O., Wholesale Dealers in

Bar, Boiler, Hoop & Sheet Iron,

NAILS and SPIKES,

Gas Pipe, Nuts and Washers, Carriage Bolts,

Swedes Iron, Cast Steel, Spring Steel, &c.

C. SCHWEITZER,

Manufacturer and Importer of

HARDWARE,

57 READE STREET,

NEW YORK.

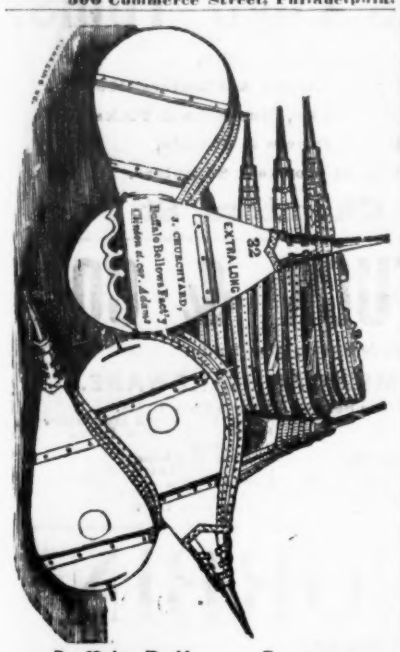
THE BEST IN USE.

BLATCHLEY'S

HORIZONTAL

Ice Cream Freezer

[Tingley's Patent], will produce a finer quality of Cream in less time and with less labor than any other Freezer made. Is perfectly air tight, and will pay the entire cost of the machine in one season, in saving of ice alone. Sizes from three to forty quarts. Call and see it or send for catalogue. CHAS. G. BLATCHLEY, Manufacturer.
506 Commerce Street, Philadelphia.



Buffalo Bellows Factory.

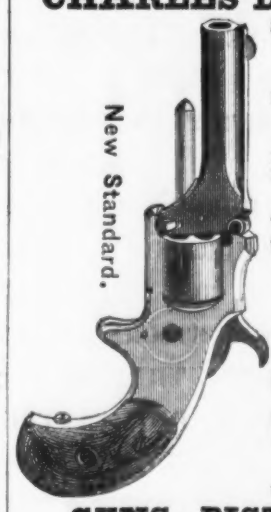
MERCHANTS WILL FIND IT ADVANTAGEOUS to buy from me, as I sell low, and my location enables me to ship at very low rates. No charge for cartage or other incidental expenses, my quotation being the whole cost to the purchaser, except the freight from Buffalo to his location. Please send your orders JOSEPH CHURCHYARD,
Clinton cor. Adams Street, Buffalo, N. Y.

DIAGRAMS OF TARGETS MADE WITH A REMINGTON RIFLE.
Remington's Breech-Loading Sporting, Hunting & Target Rifles & Shot Guns.
For Simplicity of Mechanism—Ease of Manipulation—Quality of Workmanship and Material—Accuracy of Range and Penetration, *without comparison.*
Also, Revolving, Repeating, Deringer and Vest Pocket Pistols and Rifle Canes.
Cut this out and send for Illustrated Price List.
Address E. REMINGTON & SONS,
281 & 283 Broadway, New York.
ARMORY, Ilion N. Y.

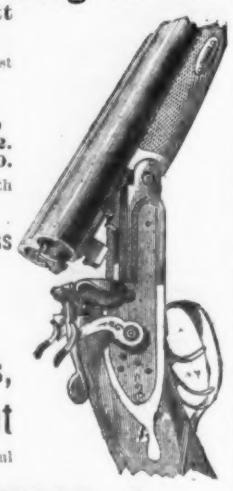
THE TANITE CO.
Inventors and Builders of special Machinery Connected with Emery Grinding.
Solid Emery Wheels from 1 in. to 3 ft. in diam.
The TANITE EMERY WHEEL is rapidly taking the place of the *File* and the *Grindstone.* If you wish to make improvements in your Factory, Foundry, Mill or Shop, introduce our *Emery Grinding Machinery*, and note the saving on *Files, Labor* and *Wages.* A judicious use of Tanite Emery Wheels and Grinding Machinery will more than repay the cost in this year's work! Nothing will *shape, reduce* or *remove* metal so cheaply and quickly as a Tanite Emery Wheel. The cutting points of a file are steel, and each minute's use injures its cutting edges. *A Tanite Emery Wheel never grows dull!* Emery is a substance harder than any metal! We have lately introduced half a dozen new styles of machines for Emery Grinding. Prices: $15, $30, $50, $60, $70, $75, $90, $95, $110, $125 and $175. Send for circulars and photographs to
The Tanite Co.,
Stroudsburg, Monroe Co., Pa.
N. B.—Stove Manufacturers are specially invited to request information.

REMOVAL.
We have removed from No. 68 Beekman Street, to the new and commodious store, No. 101 & 103 Duane Street, near Broadway, where will be found our usual assortment
GUNS, PISTOLS, CUTLERY FISHING TACKLE.
And Sporting Articles of every description.
Agents for
Alexander's Pocket Cutlery,
J. W. Court's Fish Hooks,
★ Union Repeating Pistols,
W. & S. Horrabin, Sheffield, Eng. } Pocket Cutlery.
BARTON, ALEXANDER & WALLER
101 & 103 Duane St., New York.

SCHOVERLING & DALY,
84 and 86 Chambers Street, NEW YORK.
MANUFACTURERS OF
CHARLES DALY Breech Loading Guns.
Side Snap, Golcher and Scott Systems,
Equal in every respect to the highest priced. Send for Illustrated Catalogue.

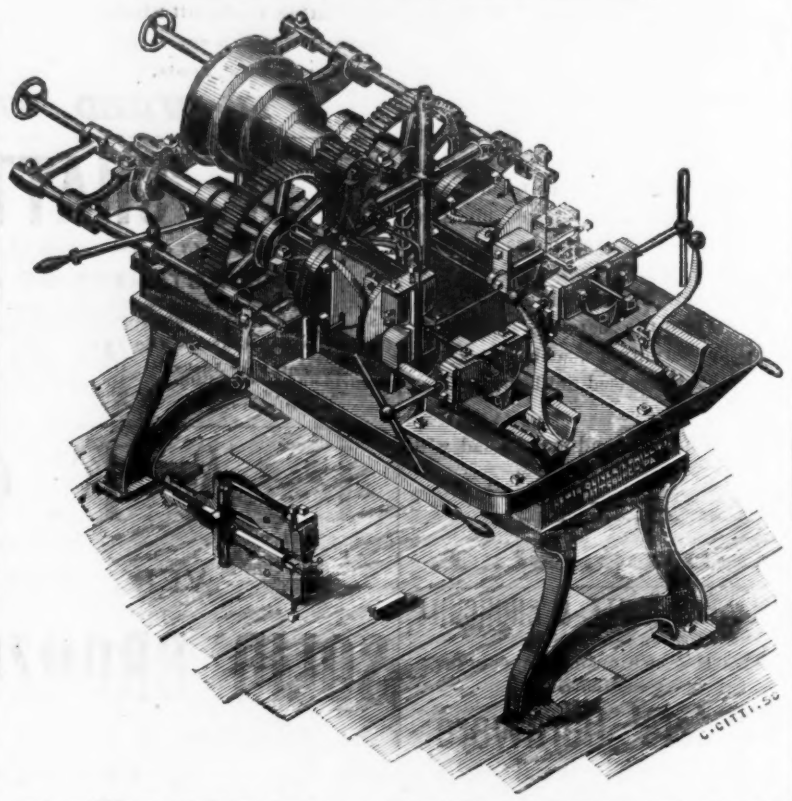


New Standard Revolvers,
XX uses Metal Cartridge No. 22.
XXX " " " No. 30.
Quality, first-class; style, similar to Smith & Wesson; price, $2·50 to $3·00 less.
Vest Pocket O. K. & Never Miss Single Cartridge Pistols.
Sole Agents for
Wm. Powell & Son's
Celebrated Breech Loaders,
Wesson's New 7-Shot
Revolver; Wrought Iron Frame, beautiful model, work unsurpassed.



GUNS, PISTOLS, GUN MATERIAL, &c.
Bottom prices, careful attention, prompt dispatch.

Lewis' Patent Bolt Machines.
DOUBLE SCREW CUTTER.

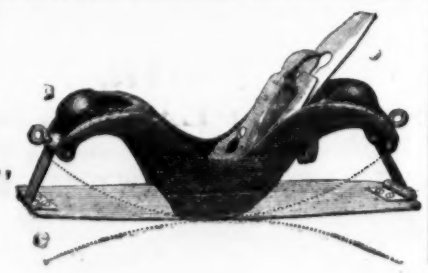


This machine will cut two bolts at once, or cut a bolt and tap a nut at same time. It cuts either right or left from 2000 inch to 4500 ½ inch bolts in ten hours. The machine is self-oiling, and the dies are self-opening. Three sizes are made—the largest cutting from 2¼ in., the medium from 1⅛ in., and the smallest from ⅜ in. down.
Send for Photographs and Descriptive Circular of Bolt Header, Screw Cutter, Nut Tapper and Bolt Pointer to
LEWIS, OLIVER & PHILLIPS,
Merchant Bar, Bundle Iron and Heavy Hardware Manufacturers,
PITTSBURGH, PA.
H. B. NEWHALL, Agent, 11 Warren St., New York.

J. D. FARRINGTON, Jr.,
38 Murray Street, New York.
MANUFACTURER OF
Japanned, Plain and Stamped Tin Ware,
TOILET WARE a specialty,
Manufactured of IXX Tin and Ornamented in Varied and Elegant Designs.

SOLE MANUFACTURER OF THE PATENT
Self-Righting Cuspadore,
With Cast Iron Bottom, and
FOOTE'S PATENT LOCK UMBRELLA STAND.

☞ Over 40 000 Sold.
BAILEY'S PATENT
Adjustable Planes.
Manufactured by the
Stanley Rule & Level Co.,
NEW BRITAIN, CONN.
Warehouse, 55 Chambers St., New York,
Sold by all Hardware Dealers.



On the Estimation of Phosphorus in Cast and Wrought Iron, Steel and Iron Ore.

BY JOHN PARRY.

The precipitation and estimation of phosphoric acid as pyro-phosphate of magnesia being (although very accurate when conducted with care), as is well known, a troublesome and slow process and, when almost daily determinations are called for, involving much labor, the author was induced to use molybdate of ammonia dissolved in measured quantities of ammonia and nitric acid and water, as recommended by Eggertz. Failing to get satisfactory results, and being informed by Mr. Snelus that a simple solution of molybdate of ammonia added to the hydrochloric solution containing phosphorus would do, the author tried the latter, but still with uncertain results.

In some instances the phosphorus could not be precipitated at all, even on adding a large excess of the molybdate solution. It was found, however, that the non-precipitation of phosphorus was due to the fact that the solution was not sufficiently acid; also that an excess of acid considerably retarded the precipitation of the phosphorus, and it consequently occurred to the author that it would be well to add a slight excess of ammonia to the hydrochloric solution, and carefully acidify with nitric, or hydrochloric acid indifferently. The latter, however, proved to be the best, and ultimately the hydrochloric solution, containing phosphorus, and about one-fourth litre in bulk, was treated as follows:

1st. Ammonia added until complete precipitation of the oxide of iron, etc. 2d. Nitric acid added in just sufficient quantity to just redissolve the precipitated oxide of iron, etc. 3d. Heated to boiling, molybdate solution added (50 grammes molybdate of ammonia in one litre of water).

Solution well shaken (glass flasks are most convenient for this). If the usual yellow crystalline precipitate does not appear, a little nitric acid is added, the flask well agitated, more acid added, drop by drop, until a distinct precipitate appears, when a small additional quantity of acid may be added. The resulting yellow crystalline precipitate filters freely, is washed with water slightly acidulated with nitric acid, and has no tendency to pass through the filter. It is dried and weighed in the usual manner. 100 parts contain 1·63 phosphorus. Provided the above details are strictly observed, the greater part of the phosphorus is thrown down almost instantaneously.

It has been found, from frequent experience, that the whole process depends on adding exactly the proper quantity of nitric acid, with solutions containing about ·001 grammes of phosphorus; also, that if the solution be too acid, no precipitate is shown; and, on afterward cautiously adding ammonia, an immediate precipitation is observed. On the other hand, the same result is shown when insufficient acid has been added, and a careful addition of nitric acid instantly throws down the phosphorus. With larger quantities of phosphorus this is not so marked; a notable quantity of phosphorus may, however, be easily overlooked; and the proper quantity of nitric acid to be added can only be learnt by experience.

In order to test the accuracy of the process, and also to ascertain the time required for the complete precipitation of a known quantity of phosphorus, the following experiments were made by my assistant, Mr. J. Needham, on whose practical skill I could thoroughly rely, the experiments being conducted under my personal supervision: A solution of phosphate of iron was made and mixed with excess of perchloride of iron. 100 cc. of this solution contained 0·1152 grammes phosphorus. For the experiments 100 cc. of the solution was poured into a tube, 100 cc. Burette, divided into 200 parts, provided with an Erdmann's float, so that the number of cc. to be used could be accurately run out.

Experiment 1.—To 25 cc. solution, excess of ammonia was added, then acidified with nitric acid, boiled 8 cc. molybdate solution added, and sufficient nitric acid until precipitation. Set aside on sand-bath 26 minutes.

Mean of five trials—Phosphorus found..... ·002868 grms.
Mean of five trials—Phosphorus in solution..... ·002880 "

Experiment 2.—25 cc. solution as above, was mixed with 12 cc. molybdate solution, to ascertain whether excess of molybdate would interfere with the accuracy of the process. Phosphorus found, ·003085 grms.

Experiment 3.—10 cc. molybdate solution added to 25 cc. phosphorus solution, afforded ·002880 grms. phosphorus.

Experiment 4.—16 cc. molybdate solution added to 25 cc. phosphorus solution, on four trials afforded ·003378 grms. phosphorus.

Experiment 5.—12 cc. molybdate solution, added to 25 cc. phosphorus solution, along with an excess of nitric acid, yielded ·001369 grms. phosphorus.

Experiment 6.—12 cc. molybdate solution added to 25 cc. phosphorus solution, 7 cc. excess nitric acid. Phosphorus found, ·00271 grms.

Experiment 7.—As above, but 14 cc. excess of nitric acid used. Phosphorus found, ·001450 grms.

The experiments 6 and 7, when set aside for many hours, gave no further precipitate.

Experiment 8.—It was thought that in experiments 2 and 4, with 12 cc. and 16 cc. molybdate solution, a shorter time might suffice for the precipitation of the phosphorus. Accordingly experiments 2 and 4 were repeated, but only allowed to stand 12 minutes. Phosphorus found, ·002958 grms.; experiment 2 (two trials). Experiment 4 repeated with 16 cc. molybdate solution, and a slight excess of nitric acid, for 12 minutes. Phosphorus found, ·00295 grms.

Experiment 9—16 cc. molybdate solution to 25 cc. phosphorus solution; solution boiled, after precipitation of phosphorus set aside for 15 minutes. Phosphorus found, ·004254 grms.

The foregoing experiments show that great caution must be exercised throughout the whole progress.

As far as the author's experience goes, it is best to add about 30 per cent. more molybdate solution than may be thought necessary; and if a considerable precipitate is at once shown, it may be considered probable that an excess of molybdate solution has been added. A slight excess of nitric acid is added, and the solution filtered as soon as the precipitate has settled, about 12 minutes being usually sufficient. In all cases the filtered solution should be re-tested for phosphorus; and if a further precipitate is shown, it is best to take a smaller quantity of the iron or steel, so that the whole of the phosphorus may be thrown down on the first addition of the molybdate solution. Experiment 9 shows that boiling must be avoided. The presence of lime, magnesia, aluminia, and silica were found, by a careful series of experiments, not to interfere with the accurary of the process. It is usually stated that the presence of soluble silica must be avoided. The author, however is unable to confim this.

For the estimations of phosphorus in Bessemer, pig, steel, and wrought iron, it is best to weigh 5 grammes of metal. Half a gramme is sufficient of common white cinder pig; one gramme for unknown irons, with second trial, guided by results of the first.

The Hitchcock Gun.—The Springfield (Mass.) *Republican* of the 7th inst. gives the following interesting information regarding the Hitchcock gun, for which our own furnaces will furnish the material: "In the fabrication of the large Hitchcock cannon, about to be manufactured at the water shops, it is necessary that the iron should be heated in a reverberatory furnace, to avoid its contact with sulphur and other impurities of coal. The gun is to be formed of rings of wrought iron or low steel, made without welds, the rings so formed as to be united first in the center, that the superfluous cinder may be squeezed out. The anvil which is to receive the blow of the steam hammer is to be seated on the piston of a hydrostatic press, so as to be lowered as each successive ring is added to the gun during the process of forging. The furnace is to be situated between the anvil and steam hammer, and so arranged that the rings project into it from below, and the hammer drops into it from above. The ring to form the muzzle of the gun is laid upon the movable anvil, and is projected sufficiently into the furnace to allow the flame to raise it to a welding heat. Meanwhile, in another part of the furnace the rings are heated to welding pitch at the same time by proportioning the heat, by means of dampers, to the relative bulk of the two parts. Without removing the parts from an atmosphere in which there is very little, if any, oxygen, they are laid together and instantly welded by a few strokes of the steam hammer. The anvil is then lowered the thickness of the ring just welded on, and the same process repeated until the entire gun is forged. One advantage Mr. Hitchcock has in his plan over all others is that he never over or underheats the metal; the temperature being regulated in either furnace by the turn of the hand, so that an even temperature may be maintained for hours if necessary, thus avoiding oxidizing, as the welding surfaces are not exposed to the atmosphere. The plunger, or ram, is to be made of cast iron, 18 inches in diameter when turned, and 14 feet long, with the head fitted to receive the anvil block. The plunger will weigh 5 tons. The anvil block proper will consist of a solid casting weighing 8 tons. Over the top of the anvil block will be placed several loose blocks, which will weigh 8000 pounds. The rings with which the gun is to be built up are to be made at Pittsburgh, Pa., and shipped to this city."

Wisconsin Iron.—Prof. Murrish, State Commissioner for the Survey of the Mineral Regions of Wisconsin, has made a report to the governor, which possesses much interest. It is largely devoted to a survey of the iron and kaolin deposits. He visited Vernon, Richland, Saux, Juneau, Jackson, Wood and other counties in the section, which he finds rich in iron ore of excellent quality. At Ironton, in the northwest part of Sauk county, there is a mine from which has already been taken twenty-seven thousand tons of excellent Hematite ore, yielding from 50 to 55 per cent. of iron. He found ore of good quality in Richland Center, and also at Reedstown, Vernon county, where, in company with Senator Nelson, of Viroqua, he dug out in about two hours half a ton of good ore from three small pits on a hillside. At Black River Falls, and above, he found mounds of iron ore. Of Wood county indications, he says: "I know of no place on earth where there are more favorable conditions combined to produce extensive deposits of rich bog ore than here." He found beds of it there extending into Portage, and also in Juneau county. From the Iron Ridge and Ironton mines, 93,500 tons of ore were taken last year.

The Grand Vizer has commissioned M. Pressel, the well known engineer, to undertake the survey of the ground for a line of railway from Tripoli, on the coast of Syria, to Bagdad, on the Persian Gulf. The Turkish Government favors this route in preference to that along the Euphrates preposed by British engineers.

A combined movement has begun among the workmen in the Sheffield trades, for the purpose of erecting works and manufactories on their own amount. It is said that the scheme is planned to extend throughout the whole of the local trades, and that is supported by the unions. The first company which has been started, is registed as the Exclusive Coopperative Iron Works Company, of Sheffield.

The 51-hour per week system is about to be adopted largely in the Scotch iron trade, but the workmen are dissatisfied with the manner in which some of the employers propose to work the system, which would, it is represented, divest the reduction of the hours of labor of all the advantages it possessed of a social and intellectual kind.

Iron.

Atwater, Wheeler & Co.,

New Haven, Conn.,

IRON MERCHANTS

AND

Manufacturers.

Manufacture in their New Haven Mill, or import through their Liverpool House, all grades of

Merchant Iron

ALSO

Scrap Iron, Wire Rods, Tin Plate, &c.

And invite correspondence with close buyers in all parts of the country.

☞Freight from New Haven to all points West and South same as from New York.

CLEVELAND.

Cleveland Rolling Mill Company,

MANUFACTURERS OF

BESSEMER STEEL RAILS,

Steel Plates and Forgings, Railroad Iron, Merchant Bar, Beams, Girders, Splices, Bolts, Spikes, &c., &c.

Office, Nos. 99 & 101 Water St., **CLEVELAND, O.**

A. F. STONE, Pres. H. CHISHOLM, V. P. & Gen. Supt.
E. S. PAGE, Sec'y.

Cleveland, Brown & Co.

MPORTERS, MANUFACTURERS AND DEALERS IN

IRON AND STEEL,

HORSE SHOES, HORSE NAILS,
NORWAY NAIL RODS,

NAILS, SPIKES,

"Standard Taper" Axles & Swedes Iron.
WINDOW GLASS.
Wrought Iron Pipe and Boiler Tubes
Chains, Rivets, Nuts, Washers, and Heav Hardware Generally.

25, 27, 29 & 31 Merwin Street,
CLEVELAND, OHIO.

ENTERPRISE IRON WORKS.

Cartwright, McCurdy & Co.

MANUFACTURERS OF

Cotton Tie, Trunk & Woodenware

HOOP IRON,

Band, Scroll and Bar Iron.

General Office & Warehouse, **CLEVELAND, O.**
Works at **Youngstown, O.**

Niles Iron Co.,

Manufacturers of

Bar & Sheet Iron,

NILES, OHIO.

L. G. ANDREWS, President.
L. E. COCHRAN, Secy. & Treas.
S. E. BROWN, Gen'l Supt.

OLD DOMINION

Iron and Nail Works Company,
RICHMOND, VA.,
R. E. BLANKENSHIP, Commercial Agent,
Manufacture

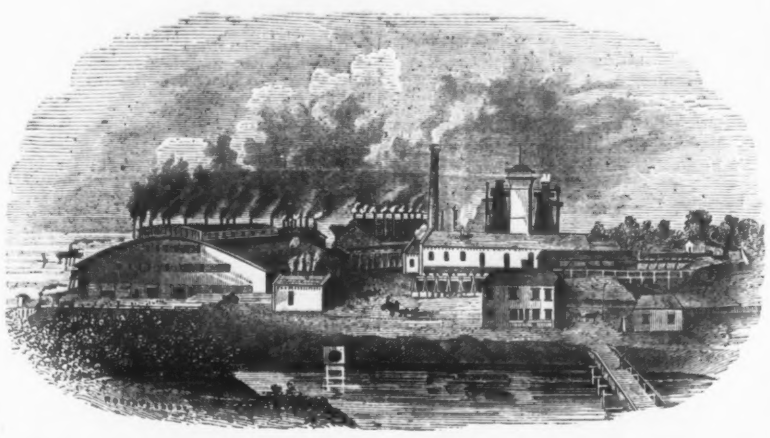
NAILS AND BAR IRON,

Bands, Scrolls, Horse Shoe Bars, Nut and Rivet Iron, Spike Rods, Shafting, Bridge Bolts, Ovals, Half Ovals, Half Rounds, &c.

Iron.

MILWAUKEE IRON CO.,

MANUFACTURERS OF



RAILROAD IRON

of Unsurpassed Excellence.

Capacity of Works, 45,000 Tons of Rails per Annum.

E. B. WARD, Prest. ALEX. MITCHELL, Treas. J. J. HAGERMAN, Secy. & Agent.

MILWAUKEE, WIS.

PHILADELPHIA.

Iron and Steel T and Street Rails

Of Best American and English Makes.

CHAIRS, SPIKES, FISH BARS,
RAILROAD SUPPLIES.

Muck Bars, OLD RAILS, Scrap, BLOOMS.

American and Scotch

PIG IRON, AND METALS.

CHAS. W. MATTHEWS,
133 Walnut St., Phila.
[Late RALSTON & MATTHEWS, 133 Walnut St.]

MALIN BROS.,
IRON
Commission Merchants,
No. 228 Dock Street,
3d door below Walnut, PHILADELPHIA.

BLAKISTON & COX,
IRON
Commission Merchants,
No. 333 Walnut Street,
PHILADELPHIA.

CAMBRIA
IRON COMPANY,
JOHNSTOWN, PA.

This Company, by mining the raw materials and manufacturing the pig metal from a mixture of the most suitable ores in their own blast furnaces, situated on both sides of the Alleghany mountains, are enabled to obtain the various kinds of iron best adapted for the different parts of a rail. Doing their own machine work and repairs, and rolling the rail way bars with the latest improved machinery they produce

RAILS

of an unsurpassed excellence of quality at the lowest market rates. The long experience of the present managers of the Company, and the enviable reputation they have established for "CAMBRIA RAILS," are deemed a sufficient guarantee that purchasers can at all times, depend upon receiving rails unsurpassed for strength and wear by any others of American or foreign make. Any of the usual patterns of iron rail can be supplied on short notice, and new paterns of desirable weight or design will be made to order The Company are also preparing to manufacture Steel Rails by the Pneumatic process. Address

CAMBRIA IRON COMPANY
218 S. Fourth St., PHILADELPHIA
or at the works, JOHNSTOWN, PA.

S. FULTON & CO.,
MANUFACTURERS OF
Pig Iron and Cast Iron Gas and Water Pipes.
ALSO HEAVY AND LIGHT CASTINGS
OF EVERY DESCRIPTION.
PLYMOUTH IRON WORKS, CONSHOHOCKEN, PA.
Office, No. 412 Walnut St., Phila.
SAMUEL FULTON. THEO. TREWENDT

DANIEL L. TOWER,
Malleable & Gray Iron Castings,
ELIZABETHPORT, N. J.
Malleable Iron Castings, either from Cupola or Air Furnaces.
N. Y. Office, 20 Cortlandt Street.

PHILADELPHIA.

The Phœnix Iron Co.,

410 Walnut St., Philadelphia.

MANUFACTURERS OF

CURVED, STRAIGHT AND HIPPED

Wrought Iron Roof Trusses

BEAMS, GIRDERS, AND JOISTS,

and all kinds of Iron Framing used in the construction of Iron Proof Buildings.

Deck Beams, Channel, Angle and T Bars

curved to template, largely used in the construction of Iron Vessels.

Pat. Wrought Iron Columns, Weldless Eye Bars,

for Top and Bottom Chords of Bridges.

Railroad Iron, Street Rails, Rail Joints and Wrought Iron Chairs.

Refined Bar, Shafting, and every variety of Shape Iron made to order.

Plans and Specifications furnished. Address

SAMUEL J. REEVES Vice Pres.

George Buchanan.
(Established 1853.)
Exporter of
OLD RAILS,
IRON AND STEEL RAILS, PIG IRON,
Machinery of every description.
19 BIRCHIN LANE, LONDON, ENGLAND.
Bankers—Messrs. Barclay, Bevan, Tritton, Twells & Co., 54 Lombard Street, London.

John E. Swan & Brothers,
Exporters of
Scotch & English Pig Iron,
Glasgow & Middlesbrough.

ELIZABETH IRON CO.
MANUFACTURERS OF
Merchant Bars
and **Fish Plates,**
ELIZABETHPORT, N. J.
E. M. DUNN, Supt. & Treas.

Artistic & Enduring

MONUMENTS,

IN GRANITE AND BRONZE.
Designs remitted by Mail.
National Fine Art Foundry
218 East 25th Street, New York.

R. D. WOOD & CO.,
PHILADELPHIA,
Manufacturers of
Cast Iron Water and Gas Pipe, Lamp Posts, Retorts, &c.

Also, Race & Mathews' **Patent Hydrant.** This Hydrant is perfectly anti-freezing, is the most ornamental and the cheapest made.
R. PAINE, Selling Agent,
Office, 173 Broadway, N. Y.

Iron.

CAST IRON FLANGE PIPES

Of any length or diameter, for Steam Engines, Exhaust Steam, Fire Purposes, Refineries, both Faced and Drilled and Plain. Also,

GAS and WATER PIPES

Of all sizes, with necessary connections for same.
LAMP POSTS, FIRE HYDRANTS, VALVES, &c.

R. A. BRICK & CO., Mfrs., 89 White St., N. Y.

METALS.
THOMAS J. POPE & BRO.,
292 Pearl Street, NEW YORK,
PIG IRON---Scotch and American,
Ingot Copper, Spelter, Nickel,
AND METALS GENERALLY.
OLD RAILS, SCRAP IRON, &c
Consignments Solicited on fair Advances.

JESSE W. STARR. BENJ A. STARR. BENJ. F. ARCHER.

CAMDEN IRON WORKS

(Established 1824), *CAMDEN, N. J.*

JESSE W. STARR & SONS,
Engineers, Contractors and Manufacturers of Gas Apparatus.
And all the
Buildings, Tanks, Holders, &c., required for the Manufacture, Purification, and Storag of Gas, and Street Mains Requisite for its Distribution.
Plans, Drawings, and Specifications promptly furnished.

IRON FOUNDERS.

CAST IRON STREET MAINS, for Water and Gas, from One and a Half Inches to FORTY-EIGHT Inches in Diameter.
Stop Valves (all sizes), FIRE HYDRANTS, HEATING PIPES, BRANCHES, BENDS, TEES
CASTINGS of any form or size required.
PHILADELPHIA OFFICE. - - 403 WALNUT STREET.

JOLIET IRON & STEEL CO.,

Joliet, Ills.,

MANUFACTURERS OF

PIG METAL, RAILROAD IRON, And Bessemer Steel Rails.

Office, 94 Washington Street, CHICAGO.

A. B. MEEKER, President. *J. H. WRENN, Sec'y and Treas.*

TAYLOR IRON WORKS,

HIGH BRIDGE, N. J.,

WHEELS AND AXLES made in the best and most careful manner, furnished separately, or "*fitted*," making complete sets.

On the line of the Central Railroad of New Jersey.

CAR WHEELS, CAR AXLES,
DRAW HOOKS & FORGINGS.

LEWIS H. TAYLOR, President.
W. J. TAYLOR, Treas. & Gen. Man., | S. P. RABER, Supt.
JAS. H. WALKER. Secretary. | EDW'D L. BROWN, General Agent.
New York Office, 93 Liberty St.

STANDARD DRAW HOOKS, finished, ready for immediate use, with nuts and plates, with or without links.

ATKINS BROTHERS,

PROPRIETORS OF THE

Pottsville Rolling Mills & Pioneer Furnaces

POTTSVILLE, PENNSYLVANIA.

Having introduced New and Improved Machinery into their Rolling Mills, and manufacturing all their Iron from the ore, and also doing all Machine Work and Repairs in their own shops, they are enabled to produce

RAILROAD IRON

Of uniform quality, unsurpassed for strength and wear, and of any required length.
Address the Proprietors, Pottsville, Pa.

The Britannia Ironworks Company, Limited,

Middlesbro' England,

MANUFACTURERS OF

ALL DESCRIPTIONS OF IRON RAILS,

Surplus Stocks of Various Sections always on hand.
London Office: W. G. FOSSICK, 6 Laurence Pountney Hill, E. C.
Weekly Output, One Thousand Tons.

NEW HAVEN

Rolling Mill Comp'y

Manufacturers of Merchant, Horse Shoe, and extra quality Iron. Guaranteed to stand specified tests. Special orders taken for common Iron.
New Haven, CONN.

BONNELL, BOTSFORD & CO.,
Youngstown, O., Wholesale Dealers in
Bar, Boiler, Hoop & Sheet Iron,
NAILS and SPIKES,
Gas Pipe, Nuts and Washers, Carriage Bolts,
Swedes Iron, Cast Steel, Spring Steel, &c.

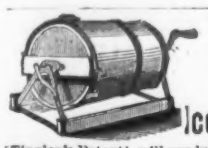
C. SCHWEITZER,

Manufacturer and Importer of

HARDWARE,

57 READE STREET,

NEW YORK.

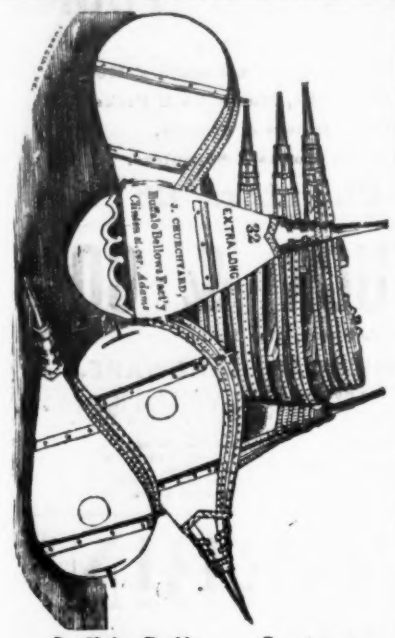


THE BEST IN USE.

BLATCHLEY'S HORIZONTAL

Ice Cream Freezer

[Tingley's Patent], will produce a finer quality of Cream in less time and with less labor than any other Freezer made. Is perfectly air tight, and will pay the entire cost of the machine in one season, in saving of ice alone. Sizes from three to forty quarts. Call and see it or send for catalogue. CHAS. G. BLATCHLEY, Manufacturer.
506 Commerce Street, Philadelphia.



Buffalo Bellows Factory.

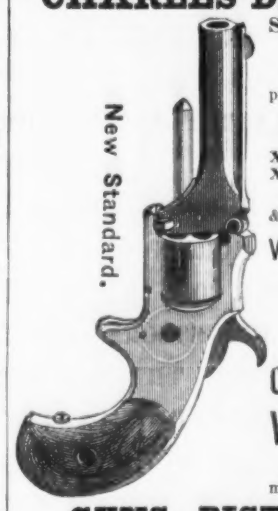
MERCHANTS WILL FIND IT ADVANtageous to buy from me, as I sell low, and my location enables me to ship at very low rates. No charge for cartage or other incidental expenses, my quotations being the whole cost to the purchaser, except the freight from Buffalo to his location. Please send your orders
JOSEPH CHURCHYARD,
Clinton cor. Adams Street, Buffalo, N. Y.

DIAGRAMS OF TARGETS MADE WITH A REMINGTON RIFLE.
Remington's Breech-Loading Sporting, Hunting & Target Rifles & Shot Guns.
For Simplicity of Mechanism—Ease of Manipulation—Quality of Workmanship and Material—Accuracy of Range and Penetration, *without comparison*.
Also, **Revolving, Repeating, Derringer and Vest Pocket Pistols and Rifle Canes.**
Cut this out and send for Illustrated Price List.
Address E. REMINGTON & SONS,
281 & 283 Broadway, New York.
ARMORY, Ilion N. Y.

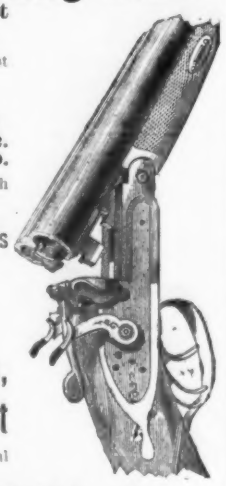
THE TANITE CO.
Inventors and Builders of special Machinery Connected with Emery Grinding.
Solid Emery Wheels from 1 in. to 3 ft. in diam.
The TANITE EMERY WHEEL is rapidly taking the place of the *File* and the *Grindstone*. If you wish to make improvements in your Factory, Foundry, Mill or Shop, introduce our *Emery Grinding Machinery*, and note the saving on *Files, Labor* and *Wages*. A judicious use of Tanite Emery Wheels and Grinding Machinery will more than repay the cost in this year's work! Nothing will *shape, reduce* or *remove* metal so cheaply and quickly as a Tanite Emery Wheel. The cutting points of a file are steel, and each minute's use injures its cutting edges. *A Tanite Emery Wheel never grows dull!* Emery is a substance harder than any metal! We have lately introduced half a dozen new styles of machines for Emery Grinding. Prices: $15, $30, $50, $60, $70, $75, $90, $95, $110, $125 and $175. Send for circulars and photographs to
The Tanite Co.,
Stroudsburg, Monroe Co., Pa.
N. B.—Stove Manufacturers are specially invited to request information.

REMOVAL.
We have removed from **No. 68 Beekman Street**, to the new and commodious store, **No. 101 & 103 Duane Street, near Broadway**, where will be found our usual assortment
GUNS, PISTOLS, CUTLERY FISHING TACKLE,
And Sporting Articles of every description.
Agents for
Alexander's Pocket Cutlery,
J. W. Court's Fish Hooks,
★ Union Repeating Pistols,
W. & S. Horrabin, Sheffield, Eng. } Pocket Cutlery.
BARTON, ALEXANDER & WALLER
101 & 103 Duane St., New York.

SCHOVERLING & DALY,
84 and 86 Chambers Street, NEW YORK.
MANUFACTURERS OF
CHARLES DALY Breech Loading Guns.
Side Snap, Golcher and Scott Systems,
Equal in every respect to the highest priced. Send for Illustrated Catalogue.

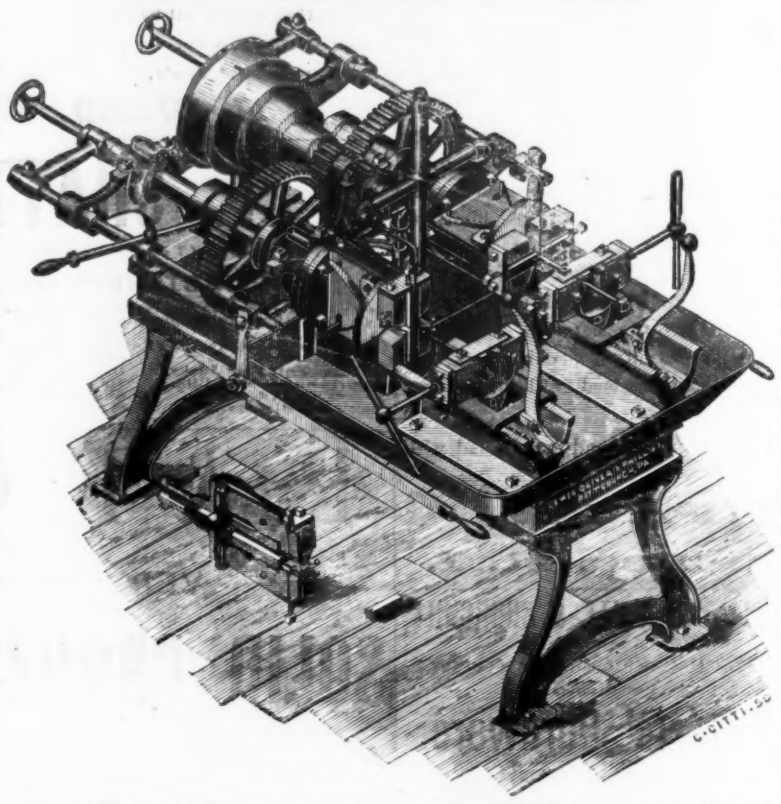


New Standard Revolvers,
XX uses Metal Cartridge No. 22.
XXX " " " No. 30.
Quality, first-class; style, similar to Smith & Wesson; price, $2 50 to $3 00 less.
Vest Pocket O. K. & Never Miss
Single Cartridge Pistols.
Sole Agents for
Wm. Powell & Son's
Celebrated Breech Loaders,
Wesson's New 7-Shot
Revolver; Wrought Iron Frame, beautiful model, work unsurpassed.



GUNS, PISTOLS, GUN MATERIAL, &c.
Bottom prices, careful attention, prompt dispatch.

Lewis' Patent Bolt Machines.
DOUBLE SCREW CUTTER.

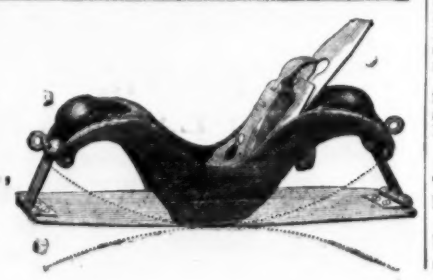


This machine will cut two bolts at once, or cut a bolt and tap a nut at same time. It cuts either right or left from 2000 inch to 4500 ½ inch bolts in ten hours. The machine is self-oiling, and the dies are self-opening. Three sizes are made—the largest cutting from 2¼ in., the medium from 1½ in., and the smallest from ¾ in. down.
Send for Photographs and Descriptive Circular of Bolt Header, Screw Cutter, Nut Tapper and Bolt Pointer to
LEWIS, OLIVER & PHILLIPS,
Merchant Bar, Bundle Iron and Heavy Hardware Manufacturers,
PITTSBURGH, PA.
H. B. NEWHALL, Agent, 11 Warren St., New York.

J. D. FARRINGTON, Jr.,
38 Murray Street, New York.
MANUFACTURER OF
Japanned, Plain and Stamped Tin Ware,
TOILET WARE a specialty,
Manufactured of IXX Tin and Ornamented in Varied and Elegant Designs.

SOLE MANUFACTURER OF THE PATENT
Self-Righting Cuspadore,
With Cast Iron Bottom, and
FOOTE'S PATENT LOCK UMBRELLA STAND.

☞ Over 40 000 Sold.
BAILEY'S PATENT
Adjustable Planes.
Manufactured by the
Stanley Rule & Level Co.,
NEW BRITAIN, CONN.
Warehouse, 55 Chambers St., New York,
Sold by all Hardware Dealers.



On the Estimation of Phosphorus in Cast and Wrought Iron, Steel and Iron Ore.

BY JOHN PARRY.

The precipitation and estimation of phosphoric acid as pyro-phosphate of magnesia being (although very accurate when conducted with care), as is well known, a troublesome and slow process and, when almost daily determinations are called for, involving much labor, the author was induced to use molybdate of ammonia dissolved in measured quantities of ammonia and nitric acid and water, as recommended by Eggertz. Failing to get satisfactory results, and being informed by Mr. Snelus that a simple solution of molybdate of ammonia added to the hydrochloric solution containing phosphorus would do, the author tried the latter, but still with uncertain results.

In some instances the phosphorus could not be precipitated at all, even on adding a large excess of the molybdate solution. It was found, however, that the non-precipitation of phosphorus was due to the fact that the solution was not sufficiently acid; also that an excess of acid considerably retarded the precipitation of the phosphorus, and it consequently occurred to the author that it would be well to add a slight excess of ammonia to the hydrochloric solution, and carefully acidify with nitric, or hydrochloric acid indifferently. The latter, however, proved to be the best, and ultimately the hydrochloric solution, containing phosphorus, and about one-fourth litre in bulk, was treated as follows:

1st. Ammonia added until complete precipitation of the oxide of iron, etc. 2d. Nitric acid added in just sufficient quantity to just redissolve the precipitated oxide of iron, etc. 3d. Heated to boiling, molybdate solution added (50 grammes molybdate of ammonia in one litre of water).

Solution well shaken (glass flasks are most convenient for this). If the usual yellow crystalline precipitate does not appear, a little nitric acid is added, the flask well agitated, more acid added, drop by drop, until a distinct precipitate appears, when a small additional quantity of acid may be added. The resulting yellow crystalline precipitate filters freely, is washed with water slightly acidulated with nitric acid, and has no tendency to pass through the filter. It is dried and weighed in the usual manner. 100 parts contain 1·63 phosphorus. Provided the above details are strictly observed, the greater part of the phosphorus is thrown down almost instantaneously.

It has been found, from frequent experience, that the whole process depends on adding exactly the proper quantity of nitric acid, with solutions containing about ·001 grammes of phosphorus; also, that if the solution be too acid, no precipitate is shown; and, on afterward cautiously adding ammonia, an immediate precipitation is observed. On the other hand, the same result is shown when insufficient acid has been added, and a careful addition of nitric acid instantly throws down the phosphorus. With larger quantities of phosphorus this is not so marked; a notable quantity of phosphorus may, however, be easily overlooked; and the proper quantity of nitric acid to be added can only be learnt by experience.

In order to test the accuracy of the process, and also to ascertain the time required for the complete precipitation of a known quantity of phosphorus, the following experiments were made by my assistant, Mr. J. Needham, on whose practical skill I could thoroughly rely, the experiments being conducted under my personal supervision: A solution of phosphate of iron was made and mixed with excess of perchloride of iron. 100 cc. of this solution contained 0·1152 grammes phosphorus. For the experiments 100 cc. of the solution was poured into a tube, 100 cc. Burette, divided into 200 parts, provided with an Erdmann's float, so that the number of cc. to be used could be accurately run out.

Experiment 1.—To 25 cc. solution, excess of ammonia was added, then acidified with nitric acid, boiled 8 cc. molybdate solution added, and sufficient nitric acid until precipitation. Set aside on sand-bath 26 minutes.

Mean of five trials—Phosphorus found.....·002868 grms.
Mean of five trials—Phosphorus in solution.....·002880 "

Experiment 2.—25 cc. solution as above, was mixed with 12 cc. molybdate solution, to ascertain whether excess of molybdate would interfere with the accuracy of the process. Phosphorus found, ·003085 grms.

Experiment 3.—10 cc. molybdate solution added to 25 cc. phosphorus solution, afforded ·002880 grms. phosphorus.

Experiment 4.—16 cc. molybdate solution added to 25 cc. phosphorus solution, on four trials afforded ·003578 grms. phosphorus.

Experiment 5.—12 cc. molybdate solution, added to 25 cc. phosphorus solution, along with an excess of nitric acid, yielded ·001369 grms. phosphorus.

Experiment 6.—12 cc. molybdate solution added to 25 cc. phosphorus solution, 7 cc. excess nitric acid. Phosphorus found, ·00271 grms.

Experiment 7.—As above, but 14 cc. excess of nitric acid used. Phosphorus found, ·001450 grms.

The experiments 6 and 7, when set aside for many hours, gave no further precipitate.

Experiment 8.—It was thought that in experiments 2 and 4, with 12 cc. and 16 cc. molybdate solution, a shorter time might suffice for the precipitation of the phosphorus. Accordingly experiments 2 and 4 were repeated, but only allowed to stand 12 minutes. Phosphorus found, ·002958 grms.; experiment 2 (two trials). Experiment 4 repeated with 16 cc. molybdate solution, and a slight excess of nitric acid, for 12 minutes. Phosphorus found, ·00295 grms.

Experiment 9—16 cc. molybdate solution to 25 cc. phosphorus solution; solution boiled, after precipitation of phosphorus set aside for 15 minutes. Phosphorus found, ·004254 grms.

The foregoing experiments show that great caution must be exercised throughout the whole progress.

As far as the author's experience goes, it is best to add about 30 per cent. more molybdate solution than may be thought necessary; and if a considerable precipitate is at once shown, it may be considered probable that an excess of molybdate solution has been added. A slight excess of nitric acid is added, and the solution filtered as soon as the precipitate has settled, about 12 minutes being usually sufficient. In all cases the filtered solution should be re-tested for phosphorus; and if a further precipitate is shown, it is best to take a smaller quantity of the iron or steel, so that the whole of the phosphorus may be thrown down on the first addition of the molybdate solution. Experiment 9 shows that boiling must be avoided. The presence of lime, magnesia, aluminia, and silica were found, by a careful series of experiments, not to interfere with the accurary of the process. It is usually stated that the presence of soluble silica must be avoided. The author, however is unable to confirm this.

For the estimations of phosphorus in Bessemer, pig, steel, and wrought iron, it is best to weigh 5 grammes of metal. Half a gramme is sufficient of common white cinder pig; one gramme for unknown irons, with second trial, guided by results of the first.

The Hitchcock Gun.—The Springfield (Mass.) *Republican* of the 7th inst. gives the following interesting information regarding the Hitchcock gun, for which our own furnaces will furnish the material: "In the fabrication of the large Hitchcock cannon, about to be manufactured at the water shops, it is necessary that the iron should be heated in a reverberatory furnace, to avoid its contact with sulphur and other impurities of coal. The gun is to be formed of rings of wrought iron or low steel, made without welds, the rings so formed as to be united first in the center, that the superfluous cinder may be squeezed out. The anvil which is to receive the blow of the steam hammer is to be seated on the piston of a hydrostatic press, so as to be lowered as each successive ring is added to the gun during the process of forging. The furnace is to be situated between the anvil and steam hammer, and so arranged that the rings project into it from below, and the hammer drops into it from above. The ring to form the muzzle of the gun is laid upon the movable anvil, and is projected sufficiently into the furnace to allow the flame to raise it to a welding heat. Meanwhile, in another part of the furnace the rings are heated to welding pitch at the same time by proportioning the heat, by means of dampers, to the relative bulk of the two parts. Without removing the parts from an atmosphere in which there is very little, if any, oxygen, they are laid together and instantly welded by a few strokes of the steam hammer. The anvil is then lowered the thickness of the ring just welded on, and the same process repeated until the entire gun is forged. One advantage Mr. Hitchcock has in his plan over all others is that he never over or underheats the metal; the temperature being regulated in either furnace by the turn of the hand, so that an even temperature may be maintained for hours if necessary, thus avoiding oxidizing, as the welding surfaces are not exposed to the atmosphere. The plunger, or ram, is to be made of cast iron, 18 inches in diameter when turned, and 14 feet long, with the head fitted to receive the anvil block. The plunger will weigh 5 tons. The anvil block proper will consist of a solid casting weighing 8 tons. Over the top of the anvil block will be placed several loose blocks, which will weigh 8000 pounds. The rings with which the gun is to be built up are to be made at Pittsburgh, Pa., and shipped to this city."

Wisconsin Iron.—Prof. Murrish, State Commissioner for the Survey of the Mineral Regions of Wisconsin, has made a report to the governor, which possesses much interest. It is largely devoted to a survey of the iron and kaolin deposits. He visited Vernon, Richland, Saux, Juneau, Jackson, Wood and other counties in the section, which he finds rich in iron ore of excellent quality. At Ironton, in the northwest part of Sauk county, there is a mine from which has already been taken twenty-seven thousand tons of excellent Hematite ore, yielding from 50 to 55 per cent. of iron. He found ore of good quality in Richland Center, and also at Reedstown, Vernon county, where, in company with Senator Nelson, of Viroqua, he dug out in about two hours half a ton of good ore from three small pits on a hillside. At Black River Falls, and above, he found mounds of iron ore. Of Wood county indications, he says: "I know of no place on earth where there are more favorable conditions combined to produce extensive deposits of rich bog ore than here." He found beds of it there extending into Portage, and also in Juneau county. From the Iron Ridge and Ironton mines, 23,500 tons of ore were taken last year.

The Grand Vizer has commissioned M. Pressel, the well known engineer, to undertake the survey of the ground for a line of railway from Tripoli, on the coast of Syria, to Bagdad, on the Persian Gulf. The Turkish Government favors this route in preference to that along the Euphrates preposed by British engineers.

A combined movement has begun among the workmen in the Sheffield trades, for the purpose of erecting works and manufactories on their own amount. It is said that the scheme is planned to extend throughout the whole of the local trades, and that is supported by the unions. The first company which has been started, is registed as the Exclusive Coopperative Iron Works Company, of Sheffield.

The 51-hour per week system is about to be adopted largely in the Scotch iron trade, but the workmen are dissatisfied with the manner in which some of the employers propose to work the system, which would, it is represented, divest the reduction of the hours of labor of all the advantages it possessed of a social and intellectual kind.

NICHOLSON FILE CO.,

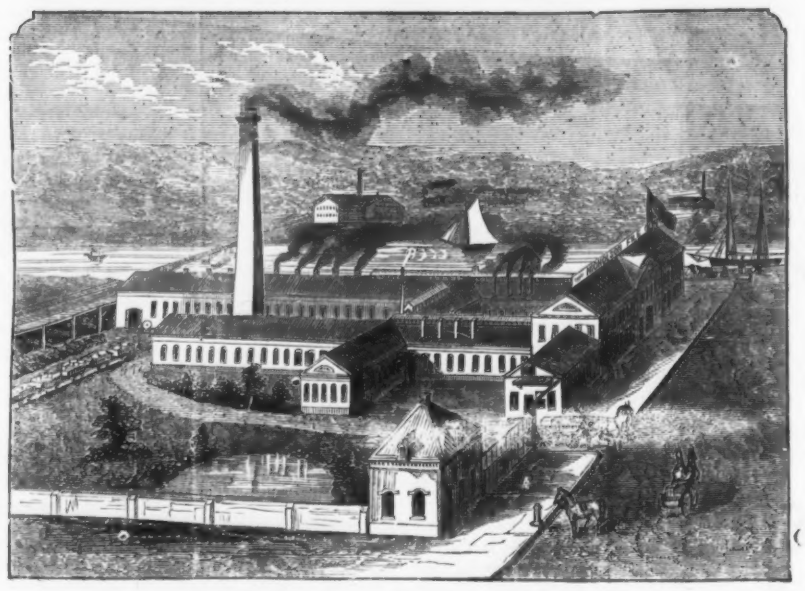
PROVIDENCE. R. I.,

INCORPORATED 1864.

TAPER FILES

And all other kinds below 6 inches

IN BOXES OF ONE DOZEN EACH.



Every File Warranted.

THE NICHOLSON FILE.

All Nicholson Files are cut with the Patent *Increment Cut*, an invention owned and controled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformityof machine work. It is now upwards of six years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

Our prices are as low as it is possible to furnish a really first-class File *from the best of File Steel*, and may be had, with full terms and conditions, by addressing the

NICHOLSON FILE COMPANY,

Providence, R. I.

LANE, GALE & CO

SOLE AGENTS

FOR

TROY WRO'T BUTT CO.S Wrought Iron Butts (Riveted Pin).

THE EAGLE SQUARE CO.'S Steel and Iron Squares.

E. F. HURD'S AXES, HATCHETS, ADZES, &c., &c.

G. T. LANE'S PLANTERS' HOES.

AGENTS FOR

BURDEN'S HORSE and MULE SHOES.

E. W. GILMORE'S STRAP and T HINGES.

SCOVIL MFG. CO.'S BRASS BUTTS.

J. M. KING'S STOCKS & DIES.

McCREA'S SHOE THREADS and TWINES.

G. F. ELLS' CURRY, CATTLE and PLANTATION CARDS

ENAMELED and TIN WARE, &c., &c., &c.

TROY. N. Y.

G. W. Bradley's Edge Tools.

Butchers' Cleavers,
Bush Hooks, all patterns,
Turpentine Tools, all kinds,
Coopers' Tools, a specialty,
Ship Carpenters' Tools,

Axes and Hatchets,
Grub, Garden & Planters' Hoes,
Mill Picks, Mattocks & Picks
Box Scrapers & Chisels,
Cotton Hooks & Samplers.

N. WEED. 37 Chambers St.

W. F. SHATTUCK & CO.,

113 Chambers and 95 Reade Street, New York.

MANUFACTURERS OF AMERICAN HARDWARE.

Coes & Taft's Pat. Wrenches.
Axe, Pick, Sledge & Hammer Handles.
Hatchet, Auger, Chisel & File Handles.
Mallets. Pat. Boot Jacks.
Gimlets and Gimlet Bits.
Augers and Auger Bits.
Cocoa Nut Dippers.
Mouse Traps. Wire Selves.
Scale Beams.
Patent Tap Borers.
Tool Chests.
Climax Horse Collars.
Brundage Horse Nails.
Maguire's Wr't Iron Goods.
Shattuck's Platform Counter Scales.
Yaw's Cow Bells.
Axes, Picks and Hatchets.
Hammers. Crow Bars.
Sad Irons.
Boring Machines.
Cast Iron Hatchets
Coffee Mills.
Star Steel Spoons.
Stocks and Dies.

P. & F. CORBIN,

MANUFACTURERS OF

VERY BEST QUALITY

OF

SOLID BRONZE HARDWARE,

For Trimming Dwelling Houses, Stores and Public Buildings, consisting of

Butts, Door Knobs, Locks, Bolts, Store Door Handles, &c.

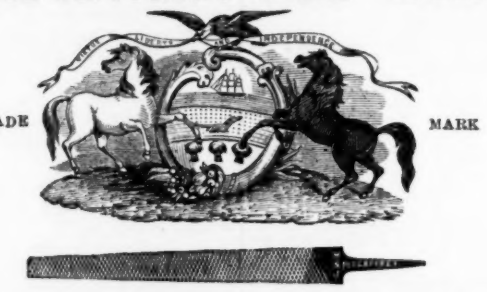
ALSO, A FULL LINE OF

Regular Builders' & Miscellaneous Hardware.

Warehouse, 87 Chambers & 69 Reade Sts., N. Y.

FACTORY, NEW BRITAIN, CONN.

PENNSYLVANIA FILE WORKS.



McCAFFREY & BROTHER,

Manufacturers of FIRST QUALITY FILES and RASPS ONLY,

Nos. 1732 & 1734 North Fourth Street, Philadelphia, Pa.

WILLIAMS WHITE & CHURCHILL,

Successors to

MACKRELL & RICHARDSON MFG. COMPANY,

Manufacturers of

Builders' Hardware,

Locks, Hinges, Hooks and Staples,
Awning Hooks, Meat Hooks, Pincers,
Champion Noiseless Pulleys,
CHAIN PULLEYS, &c.

Factory, cor. Flushing and Nostrand Avenues, BROOKLYN.

Warehouse, 73 Warren St., N. Y.

OSCAR BARNETT,

Hardware & Machinery

Gray Iron Foundries & Machine Works,
Hamilton, McWhorter and Bruen Streets.

Malleable Iron Works,
N. J. R. R. Avenue, corner Johnson Street

Store—34 and 36 McWhorter Street, NEWARK, N.

Malleable Iron Castings, from AIR FURNACE or Cupola, furnished to order.

Small Gray Iron Castings, soft and smooth.

Brass Moulders' Flasks, Cabinet and Coach Makers' Clamps

ESTABLISHED 1845. P. O. Box 522.

Black Diamond File Works.

G. & H. BARNETT, 39 41 & 43 Richmond St. Phila.

TURNER, SEYMOUR & JUDDS,

MANUFACTURERS, IMPORTERS AND DEALERS IN

Hardware and Upholsterers' Brass Goods.

SOLE AGENTS FOR

L. L. Davis' Patent Levels, Stevens' Calipers and Dividers,
Page's Auxiliary Jaws.

Manufacturers of Judds', Prindle's and Combination Patent Curtain Fixtures, Locks and Curtis' Patent Raisin Seeder, Patent Twine Boxes, Picture Nails and Hooks, Escutcheon Pins, Coat and Hat Hooks; also Miscellaneous Iron and Brass Goods.

Small Brass and Iron Castings made to order.

64 Duane Street, NEW YORK.

Putnam's Government Standard

FORGED

HORSE SHOE NAILS.

Manufactured from the best of NORWAY Iron, and warranted to give entire satisfaction.

S. S. PUTNAM & CO.,

NEPONSET, MASS.

FERNALD & SISE,

31 Beekman Street, NEW YORK,

HARDWARE MANUFACTURERS' AGENTS,

REPRESENT:

Underhill Edge Tool Co.
Yerkes & Plumb.
Crooke & Co.
Nashua Lock Co
Vulcan Horse Nail Co.
Keystone Mfg. Co

Barnes & Deitz.
Jos. Dixon Crucible Co.
Moran & Sons.
Reading Hardware Works
Tuttle & Hotchkiss.
G. H. Coe.

Langstroth & Crane.
William McNiece
Klein, Logan & Co.
Arcade File Works.
T. T. Rhodes.
Walsh & Brother.

We carry a full stock of the SUPERIOR ENAMELED WARE, manufactured by Alborn, Hart, Wiley & Co. Also good Patent Soapstone Sad and Polishing Irons.

L. A. SMITH,

NICKEL PLATER,

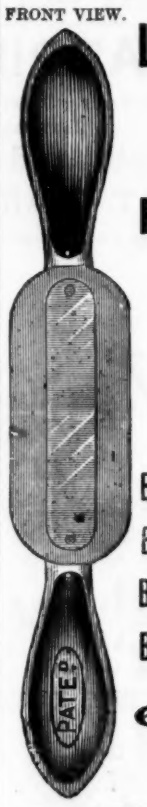
LICENSED BY

UNITED NICKEL CO. OF NEW YORK.

Premium Awarded by the N. J. State Fair,

42 Mechanic St., NEWARK, N. J.

FRONT VIEW. BACK VIEW



LLOYD, SUPPLEE & WALTON,

WHOLESALE

HARDWARE HOUSE,

AND

HARDWARE FACTORS.

BATES' MANUFACTURING CO.'S GOODS.

Bonney's Pat. Hollow Augers & Spoke Trimmers.
Bonney's Patent Double-Edged Spoke Shave.
Bonney's Patent Adjustable Gate Hinge.
Bonney's Patent Sash-Fast and Lamp Bracket.

625 Market Street,

PHILADELPHIA.

L. L. & J. T. SMITH,

Successors to L. L. SMITH & CO.,

NICKEL PLATERS,

133 & 135 West 25th St.,

Between 6th & 7th Avenues, NEW YORK.

TACKLE BLOCKS.

BURR & CO.

Manufacturers of Waterman and Russell's

PATENT IRON STRAPPED BLOCKS,

ALSO, MANUFACTURERS OF

ROPE STRAPPED BLOCKS,

21 PECK SLIP, NEW YORK.

THE "WASHOE" TOOL MFG. CO.,

SOLE MANUFACTURERS OF THE

Celebrated "Washoe" Rail Road and Mining Picks,

Including all other adze eye tools. First premium was awarded by the American Institute Fair in 1868, to this Company.

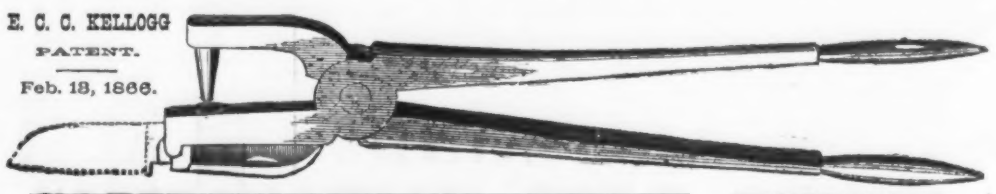
Have constantly on hand a large supply of COAL, RAIL ROAD AND CALIFORNIA OR MINERS' PICKS. We claim that OUR PRICES ARE LOWER and our picks are SUPERIOR to any thing in this country.

Liberal discount to large dealers. Send for price list.

Post Office Box 3170. **New York Office, 61 and 63 Park Place and 5 College Place.**

H. H. TRENOR, Treasurer.

E. C. C. KELLOGG
PATENT.
Feb. 18, 1866.



COMBINATION BELT PUNCH,

Pronounced by those who have used them the handiest and most desirable tool in use of its kind. As will be seen, the combination consists of

☞ **BELT PUNCH, KNIFE AND AWL,**

Also, ☞ *Needle for Lacing Rubber Belting*, so combined that each tool does its specific work and not interfere with either of the others.

E. C. C. KELLOGG & CO., Hartford, Conn.

For Sale by Hardware Dealers generally.

NELSON TOOL WORKS,

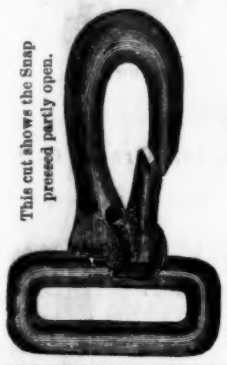
Trade Mark, H. NELSON. 157 East 32d Street, N. Y., Trade Mark, H. NELSON.

MANUFACTURERS OF

Mining & Paving Tools,
H. Nelson's Solid Eyed Pick,
Kip Hammers,
Stone Breakers,
Mason's Peen & Scabbling Hammers,
Hand or Mash Hammers,
Chipping Hammers,
Flaggers' Hammers,
Shackle Bars,
Block Stone Sledges,
Mauls,
Sledges,
Blacksmiths' Sledges,
Masons' Brick Hammers,
Swedges, all sizes,
Mill Picks, Crow Bars,
Smiths' Hand Hammers,
Coopers' Hammers,
Masons' Stone Axes,
File Cutters' Hammers,
Striking Hammers,
Fullers all sizes,
Horse Shoers' Tools,
Rail Tongues.

HAMMERS of all kinds made to order, on receipt of Pattern or Drawing. Special attention paid to R. R. Work.

This cut shows the Snap pressed partly open.



MIDDLETOWN TOOL CO.,

MIDDLETOWN, CONN.,

MANUFACTURERS OF

The Celebrated "Baldwin" Plane Iron,

HENSHAW'S PATENT HARNESS SNAPS

GERMAN HARNESS SNAPS,

PAT. GAFF TOP-SAIL SELF-MOUSING SHIP HOOKS,

Plow, Fillettster & Dado Stops of all kinds. Set Screws for Plows, Bench Plane Starts, &c. Patent Washer Cutters. Plane Iron Screws to order of any size.

Send for Illustrated Catalogue and Price List.

Something New for

OTIS FURNACES & MINES.

New Union Steam Safety Elevator,

How One Works.

RIVERSIDE IRON WORKS, DEWEY, VANCE & CO., Wheeling, W. Va., January 14th, 1873.

Messrs. OTIS BROTHERS & Co., New York.

Dear Sirs: The experience of a year proves that *your Furnace Elevator is superior to all others in use.* We have in the six weeks from December 1st to Sunday last, 12th inst., made *2724 tons, 1401 lbs. Pig Metal,* or an average of near *65 tons per day,* which required the elevator to *lift 72 feet high* 4¼ tons Ore, Coke and Limestone for each ton of metal produced, or *more than 11,500 tons material in the 6 weeks.* The largest yield in *one* day was *81 1-4 tons* Iron, involving the lifting of *345 tons* material *in 24 hours.* This has all been done to *our satisfaction,* and that, too, in the *coldest weather we have had.* Other furnaces with *water* and *pneumatic hoists* have experienced *great difficulty,* on account of the *water freezing* in the *tanks;* and in the case of the *air* hoists, we understand that two furnaces, not far from us, *had* to *"blow out,"* from being *unable to hoist stock* during the *"cold snap."* The difficulty, we are told, was caused by the *condensed moisture* in the *blast freezing to the sides of the cylinders.* so that the *piston could not move* up or down.

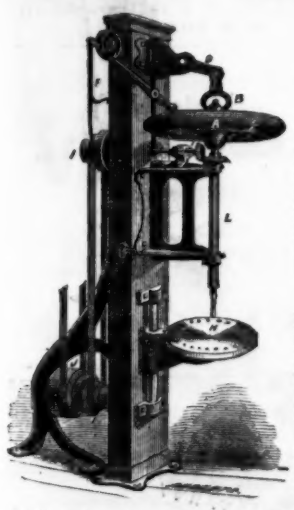
Very truly, yours, DEWEY, VANCE & Co.

Send for Circular to

OTIS BROTHERS & CO.,

348 Broadway, NEW YORK.

Biddle Manufacturing Co.,



FINE TOOLS

AND

Hardware Specialties.

We call the attention of **Carriage Makers, Machinists, Iron Railing Manufacturers, Blacksmiths,** and all others interested in **Drilling, Punching or Cutting Iron,** to our

Improved Drill Press, Shear and Punch,

feeling assured that upon examination their merits must be apparent to every one, from the fact that they possess the essential characteristics of strength, power and cheapness, in a high degree.

Illustrated Catalogues and Price Lists furnished on application.

We are also prepared to furnish light work of any description and in any quantity to order.

All kinds of Die Forgings promptly attended to.

OFFICE & WAREROOMS, 78 Chambers Street, New York.

JAMES E. HALSEY,

76 Reade Street, N. Y.,

AGENT

Industry Manuf'g Co.,

MANUFACTURERS OF

Railway, Blacksmiths' and Miners' Tools,

Railroad and Coal Picks, Crow Bars, Mauls, Tamping Bars and Picks, Rail Tongs, Sledge, Hand, Stone and Striking Hammers, Smiths' Tongs Gas Pipe Tongs, Telegraph Pole Bars, Cold Chisels, Wedges, Frocs, Cast Steel Drills, and

MINERS' TOOLS of all descriptions.

ALSO,

SALT MANUFACTURERS' TOOLS,

Bittering Pans, Ladles, Kettles, &c.

Prices furnished on application.

BUILDERS' HARDWARE,

Pure Bronzed Metal and Hand-Plated Knobs, Hinges, &c.,

Agents for Gentier's Black Lead Crucibles.

Agency and Depot of the TRENTON LOCK COMPANY.

Chain and Pulley for Heavy Sash

F. & L. MANNY & MARSHALL,

48 Warren Street, NEW YORK,

Manufacturers of every description of

CHAS. BROMBACHER,

Tarrytown N. Y.

MANUFACTURER OF

TINSMITHS' TOOLS AND MACHINE
PAPER-BOX MAKERS' DO.,
PRODUCE TRYERS, &C

E. KETCHAM & CO., 289 Pearl Street, New York Agents.

Fire Department Supplies.

Hotels, Mills, Public Buildings, &c., furnished with *Hose, Iron Piping, Hydrants* and all kinds of *Fire Supplies.*

HOSE of every description.

Rubber and Brass Discharge Pipes, Hats, Caps, Belts, Buckets, Trumpets, Axes, Hose and Ladder Straps, Spanners, &c

Patent SCREW and RING COUPLING and SPRAY NOZZLE.

☞ Send for Price List.

ALBERT F. ALLEN, Providence, R I

BUSINESS ITEMS.

NEW YORK.

The firm of Perry & Co. was established by Many & Ward in the year 1835. In the year 1843 it came into possession of Treadwell & Perry, and in 1864 the present firm—which is composed of the following members: John S. Perry, who has been connected with the stove business for over 30 years and is now president of the National Association of Stove Manufacturers, Nathan B. Perry, who was formerly a successful merchant and banker in one of our Western States, and has been connected with this firm for the past eight year, and Andrew Dickey, who is the practical member of the firm, having been engaged in the business for the past 29 years, and with this firm and its predecessors for over 23 years, and has general supervision of the works—assumed the business. The buildings comprise two distinct foundries. The upper foundry, as it is called, which is partially devoted to the purposes of a wareroom, is a five-story brick building, having a frontage on Hudson street of 170 feet, and measuring 121 feet on Beaver street, 125 feet on Grand alley, and 50 feet on Grand street. The lower foundry measures 300 feet on Grand street, 200 feet on Park avenue, and 300 feet on Warren street. Since the year 1843, the annual sales of the concern have grown from $75,000 to $900,000. From 200 to 400 men are employed here, according to the season, and the pay-roll varies from $6000 to $9000 weekly. From 4000 to 5000 tons of iron are used yearly, and a capital of $500,000 is invested. The establishment gives direct support to at least 2000 persons. It was here that base-burning stoves were first extensively manufactured. The firm of Treadwell & Perry introduced "base burners," which were made under the Littlefield patent as early as the year 1853. The production now embraces the American cooking stove, of which from 8000 to 10,000 are annually sold; the Oriental base burning parlor stove to about the same extent; the double radiating fire-place heater, and a great variety of other stoves. This firm are also largely engaged in the manufacture of warm-air furnaces. Their new double radiating base burners and surface burners combine many new improvements. Messrs. Perry & Co. also occupy a portion of the elegant St. George building, which stands upon the site of the old St. George church, corner of Beekman and Cliff streets, New York city.

PENNSYLVANIA.

The manufactory of McCaffrey & Bro. is situated at Nos. 1732 and 1734 North Fourth street, Philadelphia, and is known as the Pennsylvania File Works. It was started in January, 1863, in a small way, the proprietors employing but one hand, and has steadily grown since; they now employ upward of 20 hands, and their files and rasps have gained a reputation in the market equal to those of the best English make. They use almost exclusively American steel, and exercise great care in the different processes to which it is subjected before turning it out as a file. Messrs. McCaffrey & Bro. are practical workmen, and very careful that none but first class goods shall leave their place.

A large new foundry and machine shop went into operation at Danville a few days ago. The buildings and machinery are substantial and convenient, and embrace the latest improvements. Messrs. Cruikshank, Moyer & Co. are the proprietors.

The Reading Bolt and Nut Works are in constant operation, and employ about 100 hands. The works comprise a rolling mill department, where all the stock of iron used in the works is manufactured, and a bolt and nut manufacturing department, where all sizes of machine bolts and lag screws are made; also, hot pressed nuts, from the diminutive size used on a quarter inch rod, up to the largest size made in the country by machinery for a 2¼ inch rod, both square and hexagonal.

The iron propeller steamship Colima, built for the Pacific Mail Company, was launched on the 4th inst. from Roche's ship yard, Chester.

The rail mill of the Bethlehem Iron Company has ceased operations for the purpose of making repairs.

On February 14th the large rolling mill of the Philadelphia & Reading Railroad Company, in this city, made the first steel rail ever manufactured here. The steel was obtained from the Midvale Steel Works, at Nicetown, near Philadelphia, and is of the Siemens-Martin process, and was furnished to the rolling mill in the shape of ingots of about 9 inches square, in sections, and the rails were rolled into the ordinary pattern of 68 pounds per yard. It is expected they will be as durable as any Bessemer rails made.—*Reading Eagle.*

A company has purchased property, including buildings, in Catasauqua, for the purpose of engaging in the manufacturing of bolts, nuts and washers. Manufacturing will be commenced in about a month.

The Easton *Sentinel* says: The new Weikel iron mines, on lands of Mr. Bittenbender, near Hensingersville, Lehigh county, contains enough ore to supply half a dozen furnaces for the next fifty years. So says a competent judge. The vein is about 18 feet thick, and comes up to within 3 to 6 feet of the top of the ground. The ore can be taken out very easily and cheaply—at an expense, it is said, of not over $1 per ton.

There are now in operation at the new rolling mill of Everson, Graff & Macrum, at Fountain Mills, 10 puddling furnaces, one heater, a coffee mill squeezer, a complete set of bar rolls, and a bar cutter, or shears. When completed, the mill will have, in addition to the above, 8 or 10 more puddling furnaces, a couple of sets of sheet rolls, heating furnaces, annealing furnace and softening furnace, beside other necessary machinery used in large establishments of this kind. When the mill and blast furnace are completed and in full operation, the entire establishment will give employment to about 500 men.

On the evening of the 19th inst., Earnshaw & McMillan's black lead and crucible works, Philadelphia, were partially destroyed by fire. The loss will probably amount to $800 or $1000, and is fully covered by insurance.

DELAWARE.

A few days ago a bill was pending in the Delaware Legislature, chartering the Williamton Furnace Company, for the manufacture of iron, and articles made from iron, with a capital stock of not over $500,000, in shares of $1000 each.

NEW JERSEY.

About 33 locomotives per month are built in Paterson.

The Franklinite Iron Company, of Franklin, has increased their capital.

CONNECTICUT.

The Meriden Britannia Company has purchased within a trifle of half the stock of the Meriden Silver Plate Company.

MASSACHUSETTS.

The contract for building the Connecticut Central Road from East Hartford, Conn., to the State line near Springfield, has been let to Willis, Phelps & Co., of Springfield. The distance is 20 miles and the contract price is about $25,000 per mile.

The iron front of the new Boston *Pilot* building has been cast by Edmund Grinnell, in his foundry at New Bedford. A large double column for the corner of the building is said to be the heaviest piece of architectural work ever cast in New Bedford.

Oliver Ames, of Easton, has purchased the Porter Britannia and Plate Company's works, at Taunton.

OHIO.

The ground purchased by the Etna Iron Works for their new furnace, etc., comprises 30¼ acres. This company has given out contracts for the building of 100 houses on Etna and Vesuvius lands, within the next 90 days—50 of them to be completed in 60 days.

The stove works at Defiance have stopped work, owing to the insolvency of the company, and a large number of workmen are thus thrown out of employment. It is thought arrangements for a resumption of operations will soon be made.

The Mahoning Boiler Works, W. B. Pollock & Co., manufacture all descriptions of steam boilers, tanks, wrought and sheet iron work. The works have been established nine years. The boiler shop is 60x100 feet. Employ from 35 to 40 men, and do a business of from $75,000 to $100,000 a year.

Lambert & Gordon, Ironton, have a contract for two new hot blasts for Belfont ⁊nace. They have also constructed a beautiful portable boiler for Thayer, at Charleston, W. Va.

The firm of Arms, Bell & Co., Youngstown, manufacturers of cold pressed nuts and washers, carriage tire, machine and railroad track bolts, and lag screws, are running 22 nut machines, 3 carriage bolt headers, 2 machinery bolt headers. The works have a capacity for 25,000 to 30,000 carriage and tire bolts per day, 60 kegs of nuts and washers per day, and three tons of machine bolts per day. One hundred hands are employed, and the business amounts to $235,000 a year.

The Himrod Furnace Company, Youngstown, manufacturers of pig iron, have been established since 1859. The works cover about ten acres. The daily production of pig iron is about 75 tons. When in full blast employs 150 men. The pay roll amounts to $7000 a month.

In Springfield over thirty thousand dollars a month is paid out to men who are engaged in manufacturing the Champlain reapers and mowers—about 1000 in number—and about the same sum per month to other factory operatives and workmen in the city, making an aggregate of $60,000 per month, or an aggregate of $720,000 per year.

MISSOURI.

The last pier of the St. Joseph bridge over the Missouri was landed on the bed-rock on the 3d inst. The bridge will be completed within seventy days.

MICHIGAN.

A blast furnace company with a capital of $119,000 has been organized in Duluth—$45,000 being home capital and the balance Eastern.

A car works company has been organized at Cassopolis, with a capital of $50,000 already raised, and they propose to obtain $25,000 more.

After some delay, chiefly induced by the inactive state of the iron market, the rolling mills in Jackson are now in continuous, although partial, operation. Iron was first made experimentally November 30th last, but the severe weather has interfered materially with the arrangements. A few days since the mill was started on a scale that will allow the manufacture of about 10 tons of iron per day—this with four puddling furnaces at six heats per day. As matters become somewhat systematized, the remaining four furnaces will be kindled, giving, in the aggregate, about 22 tons per day. As business further increases, additional furnaces will be erected, the capacity of the rolling machinery being equal to 35 tons per day, and using about 75 men. At present about 30 men are employed. The mills comprise two sets of rolls—a 16 inch train and a 12 inch train. The rolls are driven by a 200 horse-power engine, with a 20 foot fly-wheel capable of 90 revolutions per minute.

INDIANA.

Woodburn, Sarnon & Co's Wheel Works, at Indianapolis, were burned on the 11th. Chief Fire Engineer, Daniel Flazier, was killed by a falling wall. The lost is estimated at $100,000.

A British iron and steel company have purchased a thousand acres of land for the purpose of working a rich seam of silkstone coal, which lies at an average depth of 380 yards, and is expected to yield several millions of tons of that mineral.

Keystone Saw, Tool, Steel & File W'ks,

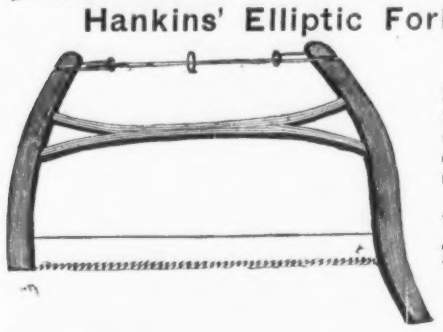
Front & Laurel Sts., PHILADELPHIA, PA.

HENRY DISSTON & SONS,

having rebuilt that portion of their extensive Works destroyed by the conflagration of Nov. 15, 1872, and having introduced new and improved Machinery for the Manufacture of every Article of the Trade, are prepared, with their increased facilities, to fill all orders with punctuality, promptness and dispatch.

Hankins' Elliptic Forked Saw Frame.

Patented June 28th, 1870.



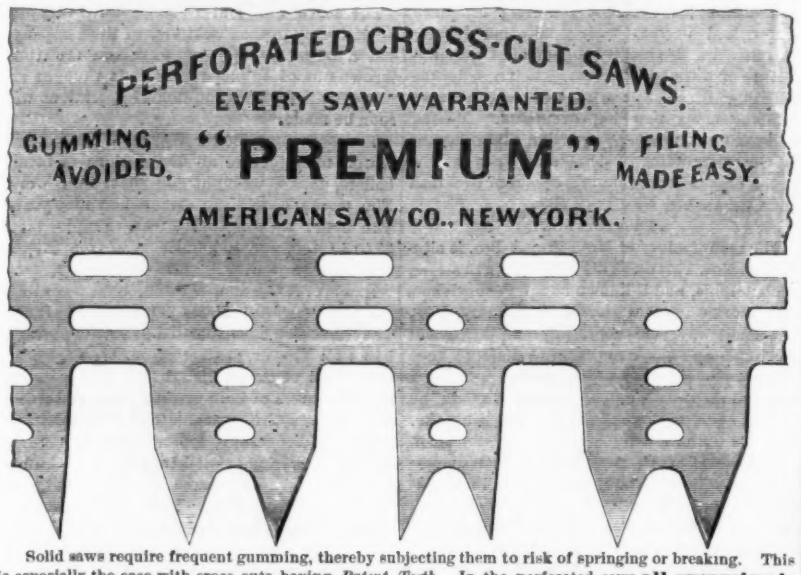
The annexed engraving represents HANKINS' ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any centre bolt, secures for the Frame great strength and durability.

These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE,
VULCAN SAW WORKS,
WILLIAMSBURGH, N. Y.

AMERICAN SAW CO.,

No. 1 FERRY STREET NEW YORK.



Solid saws require frequent gumming, thereby subjecting them to risk of springing or breaking. This is especially the case with cross cuts having *Patent Teeth*. In the perforated saws **all gumming is avoided,** and the teeth are easily kept long and in *proper shape*, saving *files, labor, expense* and *vexation*. As is well known, our saws cut faster, smoother and easier than any other.

MOVABLE-TOOTHED CIRCULAR SAWS AND SOLID SAWS OF ALL KINDS.

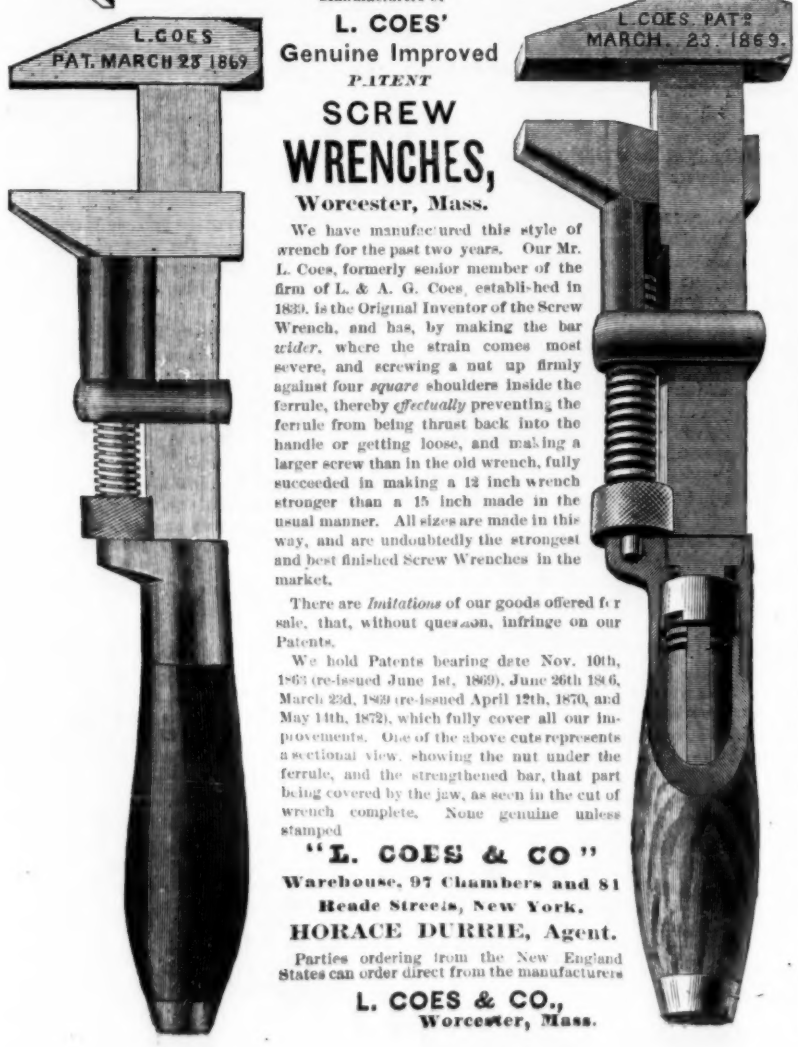
L. COES & CO.,

Manufacturers of

L. COES' Genuine Improved *PATENT*

SCREW WRENCHES,

Worcester, Mass.



We have manufactured this style of wrench for the past two years. Our Mr. L. Coes, formerly senior member of the firm of L. & A. G. Coes, established in 1839, is the Original Inventor of the Screw Wrench, and has, by making the bar *wider*, where the strain comes most severe, and screwing a nut up firmly against four *square* shoulders inside the ferrule, thereby *effectually* preventing the ferrule from being thrust back into the handle or getting loose, and making a larger screw than in the old wrench, fully succeeded in making a 12 inch wrench stronger than a 15 inch made in the usual manner. All sizes are made in this way, and are undoubtedly the strongest and best finished Screw Wrenches in the market.

There are *Imitations* of our goods offered for sale, that, without question, infringe on our Patents.

We hold Patents bearing date Nov. 10th, 1863 (re-issued June 1st, 1869), June 26th 1866, March 23d, 1869 (re-issued April 12th, 1870, and May 14th, 1872), which fully cover all our improvements. One of the above cuts represents a sectional view, showing the nut under the ferrule, and the strengthened bar, that part being covered by the jaw, as seen in the cut of wrench complete. None genuine unless stamped

"L. COES & CO"

Warehouse, 97 Chambers and 81 Reade Streets, New York.

HORACE DURRIE, Agent.

Parties ordering from the New England States can order direct from the manufacturers

L. COES & CO.,
Worcester, Mass.

WOODROUGH & McPARLIN,

CINCINNATI, O.

H. W. PEACE,

MANUFACTURER OF

SAWS OF ALL KINDS.

FACTORY, WILLIAMSBURGH, N. Y.

LIVINGSTON'S

PATENT BRACED

WOOD SAWS,

Pat. BUTCHER & KITCHEN SAWS

Recognized Standard Goods for durability, quality and finish.

For sale by the Hardware Trade and

T. F. Cheritree & Co., New York.

Excelsior Saw Works,

515 Cherry St., Philadelphia.

WM. McNIECE,

Manufacturer of

Superior Cast Steel Hand, Panel, Ripping, Ice, Compass, Hack, Butchers' Bow, Grafting, Pruning, Keyhole and Web Saws, Mowing Knives, Trunk Springs, And all other kinds of Springs, made from Sheet Cast Steel.

Capron's Improved Turbine
WATER-WHEEL.
POLISHED & DETACHABLE BUCKETS
CHEAPEST & BEST WHEEL MADE.
CAPRON WATER WHEEL CO. HUDSON N.Y.

We make a specialty of the LARGEST SIZES of **Circular Saws,** and call particular attention of lumber manufacturers to the following points of excellence:

Evenness of Temper.—The peculiar structure of our furnace subjects all parts of the saw to a DRAFT heat, and when dipped in the oil bath secures perfect uniformity.

Perfect Accuracy in Thickness.—Our saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

Properly Hammered.—Great care is taken that no saw shall leave our works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, can not be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of our Senior, who has devoted over *twenty years* to the art of saw making.

We are sole proprietors and manufacturers of the celebrated **"Clipper" Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

JAMES OHLEN.

NEW YORK SCREW BOLT WORKS.

(Estate of R. J. DEWHURST, deceased.)

JOHN COCHRANE, Executive Agent and Manager,

Office and Works, cor. Ave. D and 11th St., N. Y.

Bolts, Nuts, Turnbuckles, Washers, Forgings, &c

The attention of large consumers solicited.

HENRY K. VAN SICLEN,

BIBLIOPOLE,

133 Nassau Street,

NEW YORK.

AMERICAN or FOREIGN Publications sent by mail, post paid, at Catalogue prices.

Books and Magazines neatly Bound to suit Patrons.

FLUTING MACHINES,

PIANO STOOL SCREWS.

LOWERRE & TUCKER, 23 Railroad Place, Newark, N. J.

Send for Price List.

BOYNTON'S
LIGHTNING SAWS.

Awarded the Medal of the American Institute, 1872.

Two Direct Cutting Edges, instead of one Scraping Point. Note extra steel and durability over the old **V,** outlined on **M** tooth.

A Challenge of $500, toward expense of a public test, to prove that the Lightning Saws excel all others in Speed, Ease, and Simplicity, has been offered since 1870, and has never been accepted. More than 100,000 Lightning Saws were sold during the year 1872, the purchasers of which testify to their superior merits.

Our leading papers, such as the *Tribune, American Agriculturist, Christian Union*, etc., have published over sixty editorial notices recommending these Saws. Farmer's Clubs, Lumbermen, and Hardware Dealers unite in pronouncing the genuine Lightning Saw the greatest labor-saving implement of the age.

I have hundreds of letters from practical sawyers, voluntarily written, expressing their entire approval of these Saws.

Where the Hardware Trade do not sell the Lightning Saw, I will send a 6-foot cross-cut and a buck saw-blade on receipt of $6.

For Catalogue and additional information, address

E. M. BOYNTON, 80 Beekman St., New York,
Sole Proprietor and Manufacturer.

WHEELER, MADDEN & CLEMSON

Manufacturers of Warranted Cast Steel

SAWS

OF EVERY DESCRIPTION,

including

Circular, Shingle, Cross Cut, Mill, Hand, Roberts' and other Wood Saws, &c., &c.

CAST STEEL FILES

of the well-known brand of

WHEELER, MADDEN & CLEMSON.

FACTORIES:

Middletown, Orange Co., N. Y.

BRANCH OFFICE:

97 Chambers Street, New York.

Brundage Forged Horse Nails,

Manufactured from

BEST NORWAY IRON,

by BRUNDAGE & CO. Sold by

Wheeler Madden & Clemson,

MIDDLETOWN, ORANGE CO., N. Y.

Vanderburgh, Wells & Co.

BOOK, NEWS, POSTER & JOB TYPE, PRESSES AND INKS,

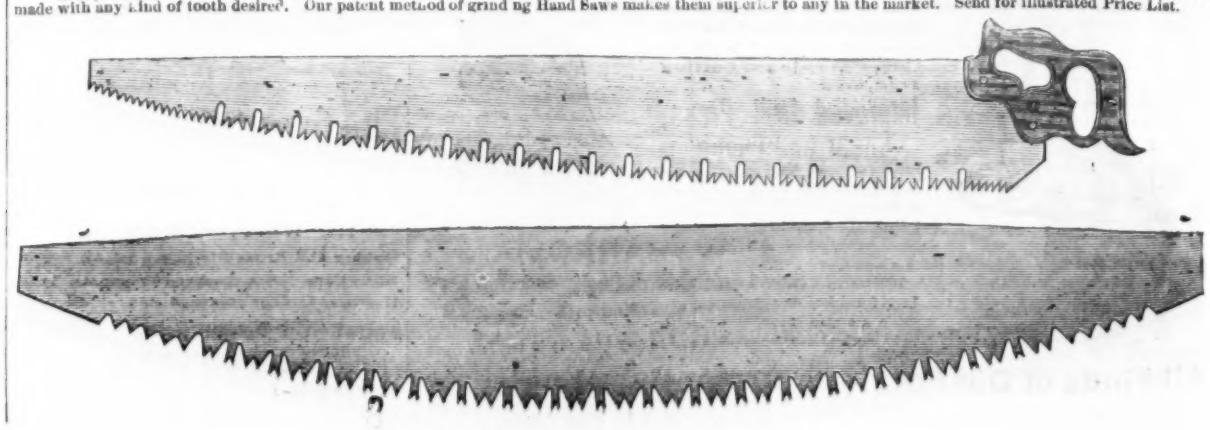
Printers' and Engravers' Boxwood Depot, SHARP PATTERN and BRAND LETTERS for MACHINISTS, Imposing Stones, PATTERN LETTERS for ARTIFICIAL PAVEMENTS, Eagle, California and other Improved Cabinets, Cases, Stands, Galleys and Composing Sticks.

110 Fulton and 16 & 18 Dutch Street, NEW YORK.

J. FLINT & CO.,

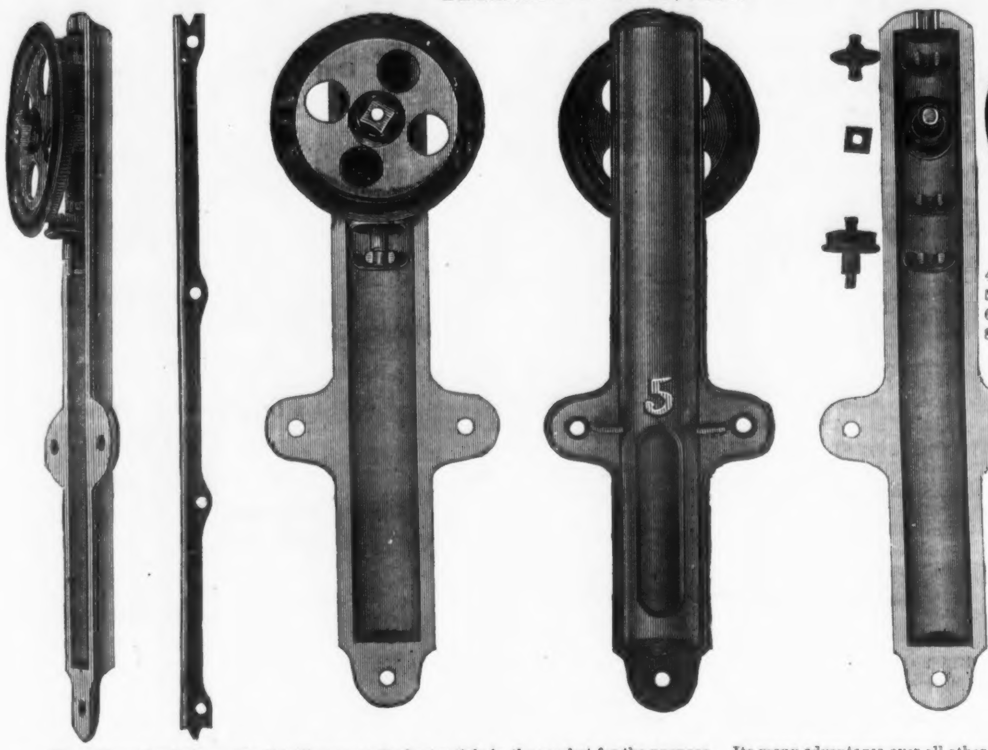
Manufacturers of all kinds of SAWS and PLASTERING TROWELS, Rochester, N. Y.

A large Stock of **Cross Cut Saws** constantly on hand. Orders filled promptly. **Dietrich's Double Handle One Man Cross Cut Saw** made with any kind of tooth desired. Our patent method of grinding Hand Saws makes them superior to any in the market. Send for illustrated Price List.



PATENT NOVELTY HANGER,

PATENTED JULY 23, 1872.



4 inch..price per pair, $1 00
5 " .. " " 1 30
6 " .. " " 2 00
8 " .. " " 3 50
30 % discount for cash.

Track for 4, 5, & 6 in..7 ₧ ft.
" " 8 in. 1
30 per cent. discount for cash.

We, without hesitation, offer this Hanger as the best article in the market for the purpose. Its many advantages over all other Hangers are as follows:

1st.—It is more than **double as strong** as any other Hanger, owing to its semi-cylindrical or curved back.
2nd.—It is provided with a friction wheel at the top of the Case, which bears against the rear or outside of the sheaves, and prevents it from **leaning outward** and causing it to **RUN TRUE,** a feature not attained in any other Hanger.
3d.—By thus causing the sheave to run true, the doors are always held up **Close to the Frame,** and maintain a close joint around it.
4th.—The sheave has but one flange, there being a lower friction wheel provided with a flange which extends out under the face of the sheave and bears against the outer side of the track, which takes the place of the extra flange in the sheave, thus doing away with the **grooved sheave** which always grinds or breaks.
5th.—IT CAN NEVER RUN OFF THE TRACK.
6th.—It is the **easiest running** Hanger made, our 5 in. answering the same as 6 in. of the checkback and ordinary makes.
7th.—It is the Most Complete Hanger, in its construction, being tasty, as well as durable.

LOUDERBACK, GILBERT & CO., 53 Chambers Street, New York City.

Also Agents for the CONNECTICUT CUTLERY CO., of Naugatuck, Conn., and keep on hand a complete assortment of their goods.

MALLORY, WHEELER & CO.,

NEW HAVEN, CONN.

MANUFACTURERS OF

Door Locks, Knobs, Padlocks,

BRONZE DOOR FURNITURE, &c.

Attention is called to our

Improved Builders' Lock

as being the best REVERSIBLE LOCK made; equal in all respects to the old Style HANDED LOCK.

Agencies:

Sargent & Co.,	- -	New York.
Heaton & Denckla,	-	Philadelphia.
Scudder, Rogers & Co.,		Boston.
Keith & Kelso,	- -	Baltimore.

Cutlery.

Landers, Frary & Clark,

New Britain, Conn.,

MANUFACTURERS OF

TABLE CUTLERY

OF EVERY DESCRIPTION. ALSO,

General Hardware,

IN VERY GREAT VARIETY.

298 BROADWAY, N. Y.

HENRY DICKINSON,

Sheffield Cutlery, Files, &c.,

66 & 68 READE STREET (near Broadway), NEW YORK.

Manufactory, SHEFFIELD, ENGLAND.

Isaac Milner's Fine Pocket and Table Cutlery.
Howard Bro.'s Medium Pocket Cutlery.
J. B. Osberton & Co.'s Medium Table Cutlery.
Isaac Milner's Razors, Butcher and Hunting Knives.
Hargreaves, Smith & Co.'s "Imperial" Files.
Milner's "♠" and Collins' "IXL" Hand Saws.

JOSEPH S. FISHER,

No. 411 Commerce St.. PHILADELPHIA,

AGENT FOR

George Wostenholm & Son,

Washington Works, SHEFFIELD,

Celebrated I-XL Cutlery, Razors, &c

SOLE AGENT FOR THE UNITED STATES OF

WALTER SPENCER & CO.,

Steel and File Manufacturers,

Rotherham, ENGLAND.

Corporate Mark.

)N◇ SPENCER ROTHERHAM

Granted 1777

Notice of Removal.

ASLINE WARD,

From 54 Beekman St. to No. 101 and 103 Duane St., N. Y.

REPRESENTING

GEO. WOSTENHOLM & SON

CUTLERY AND RAZORS,

WASHINGTON WORKS, SHEFFIELD.

CORPORATE MARK.

I·X·L

FRED'K WARD & CO., SHEFFIELD,

CUTLERY & TABLE KNIVES.

CORPORATE MARK.

B4✻ANY

H & J. W. KING
80 CHAMBERS ST. NEW YORK

ENGLISH
HARDWARE.
WOSTENHOLM'S
IXL
POCKET KNIVES,
KNIVES & FORKS,
RAZORS,
Scissors, Files, Chains,
ANVILS, VICES,
GUNS.

The Miller Bros. Cutlery Company,

Manufacturers of Patent

FINE PEN AND POCKET CUTLERY,

WEST MERIDEN, CONN.

We warrant our Knives equal in cutting qualities and workmanship to any made. We also make

SILVER PLATED POCKET KNIVES,

which will not rust or become discolored when used as a Fruit Knife, and their cutting qualities are equal to any other Knife.

CLARK, WILSON & CO., Agents,
81 Beekman Street NEW YORK.

RICHARD A. TURNOR,

37 Chambers St., New York,

Agent for

F. W. HARROLD,

Hardware Commission Merchant,

BIRMINGHAM.

JOSEPH ELLIOT & SONS,

Manufacturers of Razors, Table Knives, &c.,

SHEFFIELD.

CORPORATE MARK,

✻ ✠

Joseph Rodgers & Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

CHARLES PEACE, Jr., Agent.

The demand for **Joseph Rodgers & Sons'** productions having considerably increased they have, in order to meet it, greatly extended their Manufacturing Premises and Steam Power.

To distinguish Articles of **Joseph Rodgers & Sons'** Manufacture, please to see that they bear their Corporate Mark.

ESTABLISHED 1852.

NEW YORK KNIFE CO.

MANUFACTURERS OF SUPERIOR

Table & Pocket Cutlery,

WARRANTED TO BE MADE OF THE BEST MATERIAL.

WALKILL RIVER WORKS,

Walden, Orange Co., New York.

THOS. J. BRADLEY. President.

WALSH, COULTER & FLAGLER,

83 Chambers and 65 Reade Sts., New York,

AMERICAN AND FOREIGN

HARDWARE,

SOLE AGENTS FOR THE SALE OF

JOHN ROTHERY'S

CELEBRATED FILES.

Walden Co-operative Knife Co.

SUPERIOR POCKET CUTLERY.

TRADE MARK.

Nixon & Winterbottom,

PYRAMID WORKS, Sheffield, Eng.

Manufacturers of Table Cutlery, Butcher Knives, Bread Knives, &c., by patent and Improved Machinery. Agents: U. S., Smith & Hall, 58 & 60 Reade St., N. Y.; Canada, Thos. Ellin & Co., Sheffield, Eng.

Thomas Taylor,

43 Chambers Street, New York.

Agent for

HENRY H. TAYLOR,

SHEFFIELD CUTLERY,

H.H.TAYLOR HTH SHEFFIELD **Graining Combs.** H.H.TAYLOR HTH SHEFFIELD

Sole Agency in the U. S. for

Jonathan Crooks & Son's Celebrated

Corporate Mark.

Pen, Pocket and Sporting Knives.

Higganum Manu'fg Co.,

Higganum, Ct., Manufacturers of all kinds of

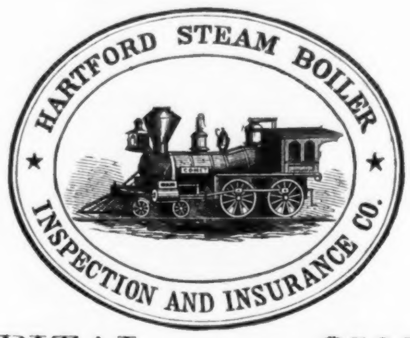
Plows, Hay Spreaders and

Agricultural Implements in general.

Storehouse, Warehouse,

and all kinds of Trucks a specialty.

Orders solicited.



CAPITAL, - - $500,000.

Issues Policies of Insurance, after a careful Inspection of the Boilers

COVERING ALL LOSS OR DAMAGE TO

Boilers, Buildings and Machinery,

ARISING FROM

STEAM BOILER EXPLOSIONS.

The Business of the Company includes all kinds of STEAM BOILERS.

Full information concerning the plan of the Company's operations can be obtained at the

COMPANY'S OFFICE, HARTFORD, CONN.,

or at any Agency.

J. M. ALLEN, Pres. *CHAS. M. BEACH, Vice-Pres.* *J. B. PIERCE, Sec'y.*

Board of Directors:

J. M. ALLEN, President.
LUCIUS J. HENDEE, Pres't Ætna Fire Ins. Co.
FRANK W. CHENEY, Ass't Treas. Cheney Brothers Silk Manufacturing Co.
CHARLES M. BEACH, of Beach & Co.
DANIEL PHILLIPS, of Adams Express Co.
GEO. M. BARTHOLOMEW, Pres't Amer. Nat'l Bank.
RICHARD W. H. JARVIS, Pres't Colt's Fire Arms Manufacturing Co.
EDWARD M. REED, Sup't Hartford & N. Haven R. R.
Hon. CHAS. M. POND, Treas. State of Connecticut.
THOMAS O. ENDERS Sec'y Ætna Life Ins. Co.
LEVERETT BRAINARD, of Case, Lockwood & Brainard.
GEN. WM. B. FRANKLIN, Vice Pres't Colt's Pat. Fire Arms Mfg. Co.
AUSTIN DUNHAM, Pres't Willimantic Linen Co.
GEO. CROMPTON, Crompton Loom Works, Worcester.
EARL P. MASON, Pres't Prov. & Wor. R. R., Prov.
WILLIAM ADAMSON, of Baeder, Adamson & Co. Phila.
WM. B. BEMENT, of Wm. B Bement & Co., Phila., Pa.

THEO. H. BABCOCK, Manager,
New York Branch, No. 1 Park Place.

CROOKE & CO.,

MANUFACTURERS OF

WROUGHT IRON BUTTS,

All our goods are manufactured from patent faced iron plates; they have a smooth face and bright finish.

163 & 165 Mulberry Street New York.

HOWSONS'

OFFICES FOR PROCURING

UNITED STATES AND FOREIGN

PATENTS,

Forrest Buildings

119 SOUTH FOURTH ST., PHILADELPHIA.

AND MARBLE BUILDINGS

605 Seventh St. (Opposite U. S. Patent Office, ***Washington, D. C.***

H. HOWSON, Solicitor of Patents. | C. HOWSON Attorney at Law.

Communications should be addressed to the PRINCIPAL OFFICES PHILADELPHIA.

JAMES A. WHITNEY, Patent Agent and Expert, offers his service to inventors in securing **American and Foreign Patents,** as expert in patent cases, etc.

"We take pleasure in commending the new agency to the favor of inventors." *The Iron Age,* June 6.

"Of Prof. James A. Whitney we can speak from a personal acquaintance. Any person seeking professional advice from him will be certain of just and honorable treatment." Norwich, Conn., *Daily Advertiser* May 29.

"His long experience in this field of investigation has made him familiar with the business in all its branches, and we can confidently recommend him to those needing his services." *Prairie Farmer,* Chicago, June 1.

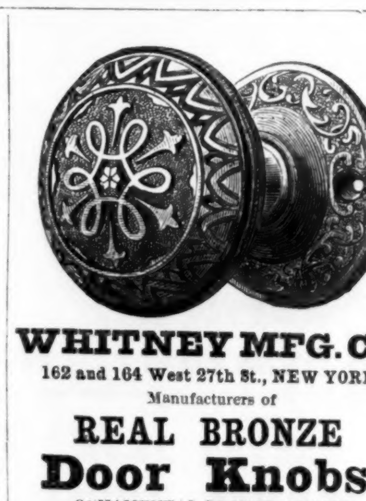
"Few persons have had more opportunities for learning the necessities of such a business." *The World* (weekly), New York City, June 19.

"A thorough mechanical engineer with a valuable practical experience in the machine shop." *Am. Railway Times,* Boston, June 8.

"Mr. Whitney is qualified by experience and practical knowledge. His life and experience have been such as to develop the fullest sympathy with men engaged in industrial pursuits, especially inventors." *Moore's Rural New Yorker,* June 8.

Address, for full information, free of charge,

128 Broadway, Room 11, New York City.



WHITNEY MFG. CO.

162 and 164 West 27th St., NEW YORK.

Manufacturers of

REAL BRONZE

Door Knobs,

ORNAMENTAL BRONZE FRONT

MORTISE LOCKS

Sash Fasteners, Bell Pulls,

Shutter Knobs,

FAST AND LOOSE JOINT

ORNAMENTAL BUTTS.

Catalogues sent on application.

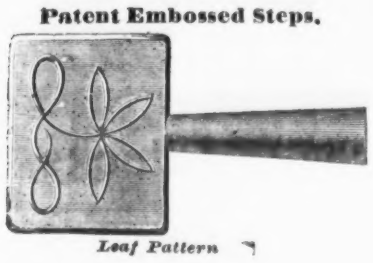
Hart, Bliven & Mead Mfg. Co.,

General Agents for New York.

H. D. SMITH & CO., PLANTSVILLE, CONN.

Established 1850.

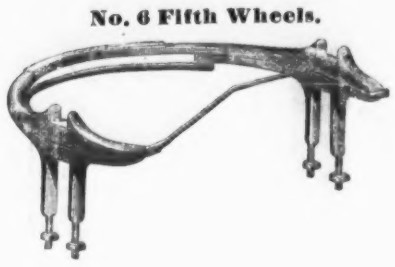
Patent Embossed Steps.



Leaf Pattern

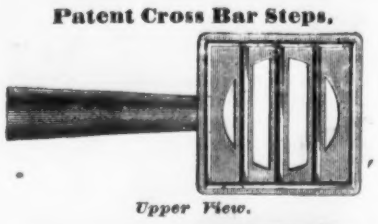
King Bolt Yokes.

No. 6 Fifth Wheels.



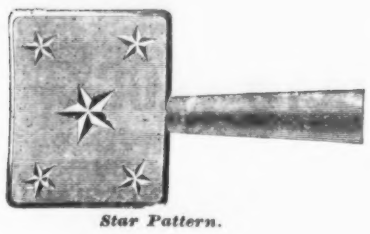
1871 Pattern Shaft Couplings.

Patent Cross Bar Steps.



Upper View.

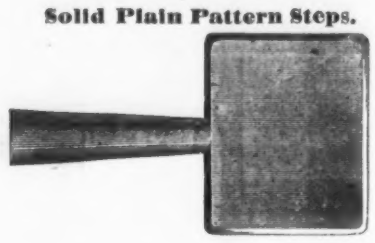
Lower View.



Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.

Solid Plain Pattern Steps.



MANUFACTURERS OF A LARGE VARIETY OF FIRST-CLASS

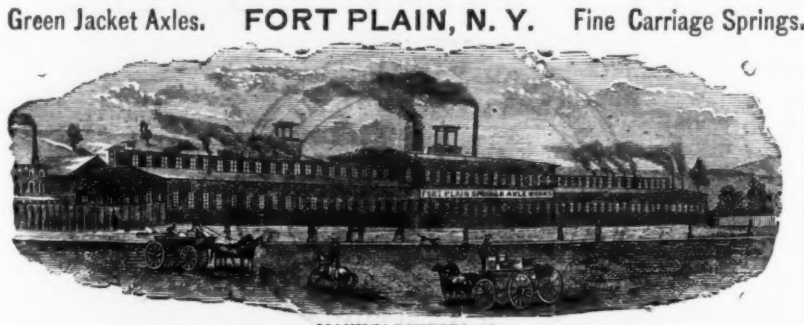
FORGED CARRIAGE IRONS.

Send for Price List.

FORT PLAIN SPRING & AXLE WORKS,

CLARK, SMITH & CO.,

Green Jacket Axles. FORT PLAIN, N. Y. Fine Carriage Springs.



MANUFACTURERS OF

English and Swedes Steel Springs, and Iron and Steel Axles.

Execute orders promptly for

Black, Bright, Tempered and Oil Tempered Springs,

Of any Pattern or Style. Also for **AXLES of any description, from a COMMON LOOSE COLLAR to the FINEST OF STEEL.**

Our facilities for manufacturing are very extensive, and with our recent additions of new and improved machinery, we defy competition.

Send for Price List and Descriptive Circular.

CARRIAGE BOLTS.

Buy the Best.

Clark's Patent Carriage Bolt.

Best Bolt manufactured for all kinds of agricultural machinery. Will not split the wood, and can not turn in its place.

MANUFACTURED BY

CLARK BROS. & CO., Milldale, Conn.

Also Manufacturers of

Plow and Machine Bolts, Coach Screws, Nuts, Washers, Tire Blanks, Rivets, &c.

Send for New Illustrated Price List, just completed.

R. M. GREEN & CO.,

100 Chambers Street, NEW YORK.

Hardware Manufacturers' Agents.

REPRESENT:

RATCHELLER MFG. CO., Cast Steel Forks, Rakes, &c.
VERMONT SNATH CO., Snaths.
H. C. COLE, Ox Bows.
NORTH CAROLINA HANDLE CO., Axe and Pick Handles.
EXCELSIOR MFG. CO., Carriage Rims, Hubs and Spokes, Wood Hay Rakes.
VERMONT MFG. CO., Hay, Manure and Shovel Handles. All kinds of Ash, and Hickory Timber Sawed and Turned to order.

CARRIAGE MATERIALS.

AXLES

Blacksmiths' Supplies, Bolts, Woodwork, TRIMMINGS, &c. Iron & Steel. HORSE SHOES

SPRINGS

Manufactured and sold by

GUY C. HOTCHKISS & FIELD

85 First Street, Brooklyn, E. D.

OFFICE AND WORKS, MACHINERY FOR THE MANUFACTURING OF HUBS & SPOKES. J. GLEASON PHILADELPHIA PA. Cor. 2nd & Diamond Sts.

H. M. WENTWORTH & CO.,

Manufacturers of

Carriage Axles & Springs,

BEST SWEDES STEEL,

Sword Tempered, and

Common Patent Tempered SPRINGS

Of every description, made to order.

Dam No 1 Water St., Gardiner, Me.

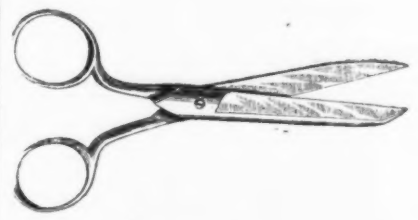
Send for Price List.

H. M. Wentworth, F. A. Plaisted.
David Wentworth.

USE THE "SIMONDS" KNIVES & SECTIONS FOR MOWERS & REAPERS THE BEST ARE THE CHEAPEST

For sale by Machine Agents and Dealers

Simonds Mfg. Co., Fitchburg Mass.



United States Steel Shear Company.
West Meriden Conn.
Solid Steel Scissors.

Phila. Carriage Bolt Works,

Established 1855.

Hand-made Axle Clip.

Carriage Bolt.

T. SKELLY

MANUFACTURER OF FINEST QUALITY OF

NORWAY IRON

Step Bolt.

CARRIAGE & TIRE BOLTS,

Hand Made Axle Clips,

Skelly's Improved T-Head & Whiffletree Bolts,

Cone, Cheese, Square and Diamond Head

BOLTS,

And all the Different Varieties Used by Makers of Fine Carriages,

Pointed Tire Bolt.

Elliptic Head Perch Bolt.

TWENTY-FOURTH ST., BELOW CALLOWHILL,

PHILADELPHIA, PA.

EVERY BOLT AND NUT WARRANTED TRUE TO SIZE AND FIT.

Skelly's New Style Improved T Head or Shaft Bolt.

Cone Head Bolt.

THE

Philadelphia Star Bolt Works.

Carriage and Tire Bolts, Axle Clips, **Blank Bolts, &c.**

Trade Mark.

Square Head Bolts, Wood Screws. **Plow Bolts, &c.**

TOWNSEND, WILSON & HUBBARD,

2301 Cherry Street, PHILADELPHIA,

MANUFACTURERS OF THE CELEBRATED

"STAR" Brand of Axle Clips.

Leather Belting.

BACON BROTHERS,

TANNERS,

And Manufacturers of Oak

LeatherBelting

PATENT

Lace and Factory Leather.

M. P. BACON. H. E. BACON. Pawtucket, R. I.

Alexander Brothers,

Manufacturers of **OAK TANNED**

LeatherBelting

412 North 3d, Philadelphia, Pa.

WM. COUPE & CO.,

Inventors and sole man'f'rs of the celebrated

Excelsior Lace & Picker Leather.

Also, Manufacturers of the Wood and Page

LACE LEATHER,

South Attleboro, Mass.

WM. H. STOYLE.

MANUFACTURER OF

Machine Cut Belt Lacing,

No. 403 Library Street,

PHILADELPHIA.

Solid Cast Steel Drag Teeth.

A set of 40 boxed and delivered to Express or R. R.:
¾ □, 11 in. long, about 45 lbs., for $6·00
⅞ □, 11 in. long, about 61 lbs., for $7·50
Liberal discount to the Trade. Address
SWEET'S MFG. CO., Syracuse, N. Y.

HART, BLIVEN & MEAD MFG. CO.,

CHARLES BLIVEN, Pres. EDWARD B. MEAD Treas.

Office and Warehouse at

243 and 245 Pearl, and 18 and 20 Cliff Streets,

NEW YORK.

Three Sets of Factories at Kensington Conn.,

MANUFACTURERS, IMPORTERS AND DEALERS IN

General Hardware.

The Iron Age Directory

and Index to Advertisements.

AmericanSilks

MANUFACTURED BY

CHENEY BROTHERS,

Hartford and South Manchester,

CONNECTICUT.

BLACK GROS GRAIN SILKS.
COLORED GROS GRAIN SILKS.
STRIPED AND FIGURED SILKS.
ALL SILK POPLINS. MARCELILNES.
LUSTRINGS. FOULARDS.
FLORENTINES.
PONGEE HANDKERCHIEFS.
BELT RIBBONS. SASH RIBBONS.
GROS GRAIN RIBBONS.
MACHINE TWIST. SEWING SILK
TRAMS AND ORGANZINES.
FINE ORGANZINES for
SILK MIXTURE CASSIMERES.

Silks for Special Purposes to Order

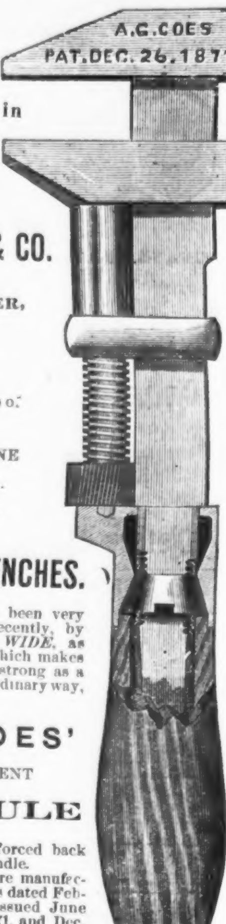
SOLD AT WHOLESALE BY

A. T. STEWART & Co

New York, Boston and Philadelphia

And retailed at all firstclass Dry Goods Stores.

Hardware.



Established in

A. G. COES & CO.

WORCESTER,

Mass.,

Manufacturers of

THE GENUINE

COES'

SCREW WRENCHES.

Our goods have been very much improved recently, by making the *Bar WIDE*, as shown in the cut, which makes a 12 in. Wrench as strong as a 15 in. made in the ordinary way, and by using

A. G. COES'

NEW PATENT

FERRULE

Which cannot be forced back into the handle.

☞ Our goods are manufactured under Patents dated February 7, 1860, (re-issued June 29, 1871), May 2, 1871, and Dec. 26, 1871, and any violation of either will be *vigorously prosecuted.*

We call particular attention to our new Patent Ferrule, with its Supporting Nut (shown in section in the above cut), which makes the strongest Ferrule fastening known.

A. G. COES & CO.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.

303 Walnut St.,

PHILADELPHIA.

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves, and firms connected with us viz.

A. Pardee & Co. — HAZLETON, CRANBERRY, SUGAR LOAF
G. B. Markle & Co. — JEDDO, HIGHLAND.
Pardee, Bro. & Co. — LATTIMER.

OFFICES:

WM. LILLY, Mauch Chunk, Pa.
WM. MERSHON, Agent, 111 Broadway N.Y
WM. H. DAVIS, Agent, Easton Pa.

Glass.

A. C. Downing & Comp'y,

Importers of and Dealers in

Window Glass,

FRENCH PICTURE

And Car Glass, etc.

Estimates given by mail.

57 Beekman & 87 Ann Sts

NEW YORK.

ROMER & CO.,

Established 1837.

Manufacturers of Patent Brass Pad Locks for Railroads and Switches. Also, Patent Stationary R. R. Car Door Locks. Patent Piano and Sewing Machine Locks.

141 to 145 Railroad Avenue, NEWARK, N. J.

Illustrated Catalogues sent on application.

E. & C. WOOD,

Manufacturers of

BRUSHES.

For the

Hardware, Drug and Paint and Oil Trades.

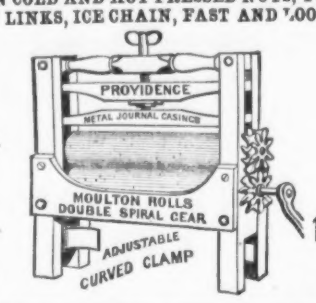
Illustrated Price List furnished on application.

Warehouse, 299 Pearl St., New York.

No. 11 Warren Street, NEW YORK.

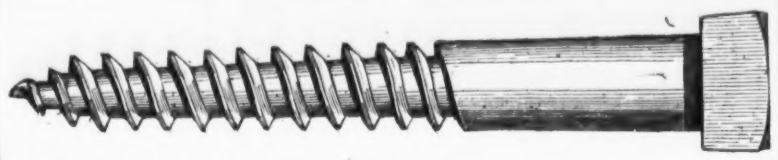
PROVIDENCE TOOL CO.,
Providence, R. I.,
Manufacturers of
SQUARE AND HEXAGON COLD AND HOT PRESSED NUTS, PICKS, BOLT ENDS, TURN BUCKLES, CHAIN LINKS, ICE CHAIN, FAST AND LOOSE JOINT HINGES.

Providence Clothes Wringer
Reliance Clothes Wringer



SHIP CHANDLERY
OF
All Descriptions.
Warerooms,
11 Warren, St. N. Y
H. B. NewhaN, Ag't.

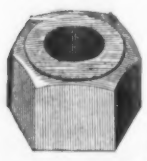
NEW YORK.



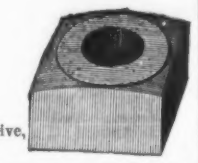
WM. H. HASKELL & CO.,
Pawtucket, R. I.,
Manufacturers of
Machine and Plow Bolts,
Coach Screws, Set Screws & Tap Bolts.
Warerooms, No. 11 Warren Street, New York.
H. B. NEWHALL, Agent.

No. 11 Warren Street, NEW YORK.

READING HOT PRESSED NUT WORKS.
OF
J. H. Sternbergh,
READING, PA.,
H. B. NEWHALL, Agent, New York,

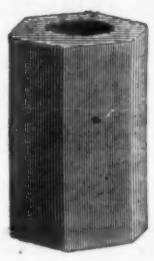


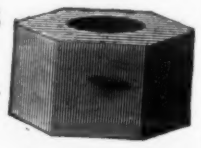
Manufacturing my own stock of Iron from the Pig Metal, and making all sizes of both Square and Hexagon Nuts for ¼ inch Rods and upward to 2 inch Rods, inclusive, I am able to control quality, and offer a superior article in either large or small quantities, at the lowest possible price.



No. 11 Warren Street, NEW YORK.

RHODE ISLAND NUT CO.,
Providence, R. I.,
Manufacturers of
Patent Rolled Hexagon Nuts, Rods and Tubing.





The Patent Rolled Nut is superior to the best Forged Nut.

In the Patent Rolled Nut the iron is not cut away or punched aside to form the hole, but is rolled over a rod by heavy iron rollers. This process refines the metal. Its fibers are not torn and shocked. It is cut without injury to the tap. The even surface and the general finish of the Nut commend it to machinists.

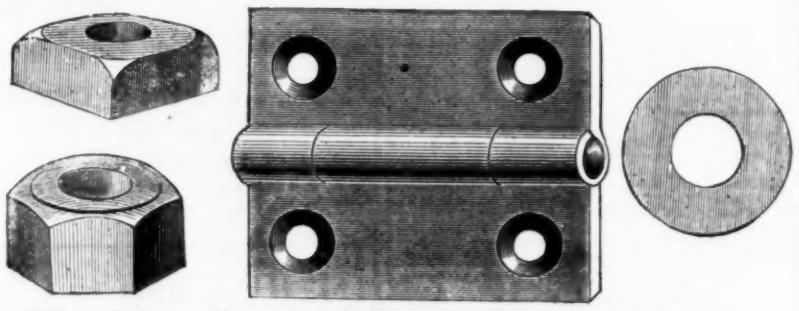
Warerooms, No. 11 Warren Street, New York.
H. B. NEWHALL, Agent.

No. 11 Warren Street,

LEWIS, OLIVER & PHILLIPS,
MANUFACTURERS OF
Merchant Iron & Heavy Hardware,
Carriage, Machine, Square Head, Bridge and Skein
BOLTS,
Nuts, Washers and Coach Screws, Harrow Teeth, Plow Handle Extension Rods, &c.
Bolts, Spikes & Wrought Iron Shapes,
For BRIDGES, DAMS, PIERS, BREAKWATER and other permanent structures, made promptly at a small advance in price of iron.
FOUNDATION BOLTS FOR DAMS, with ends slit by machinery.
Hook and Eye, Screw Hook and Strap, and Strap and T Hinges.
Originators and Patentees of their new line of
WAGON HARDWARE,
Comprising Patent Wagon Box Strap Bolts and Wrought Iron Bolster Plates, Large Head Wagon Rivets, Neck Yoke Eyes, King Bolts, Box Rods, Rubber Plates, Axle Bolts, Queen Bolts, Tongue Cap, Sand Band, Single Tree and other Labor Saving odd shapes of Iron. Send for Prices to
LEWIS, OLIVER & PHILLIPS,
91 and 92 Water Street and 114 and 116 First Avenue, PITTSBURGH, PA.
Or H. B. NEWHALL, Agent, 11 Warren St., New York.

No. 11 Warren Street,

THE ÆTNA NUT COMPANY,
Manufacturers of



Machine Forged & Hot Pressed Nuts,
Washers, Bolts, Wrought Narrow Butts, Table and Trunk Hinges,
Fellow Plates, Axle Clips, Wrought Clip Yokes, Rivets and Burs,
We desire to call your attention to our **MACHINE FORGED NUTS.** They are made from extra quality of Iron, combining *lightness* and *strength*, and are especially well adapted for *Agricultural Machines* and *Carriage Work.*
Our **WASHERS** are made on improved machines—making them *perfectly flat*, smooth and true, and are warranted superior to any in market.
WAREROOMS: No. 97 Chambers & 79 Reade Sts., N. Y.
C. L. CAMPBELL, Agent.

Empire.

Great Improvement in
LAWN MOWERS.
The most simple and easy running Lawn Mowers made.
All who need a Lawn Mower, either for a small or large Lawn, should examine the merits of Walker's Patents, **Empire** and **Monitor.** They are simple in construction and very light, not fatiguing the operator.
Send for *Circular.*

Monitor.

Price of Empire, $20·00. Price of Monitor $15·00.
Agents wanted in every Town.
MANUFACTURED BY
BARLOW & WALKER, Sing Sing, N. Y.
Agents in Cincinnati, HOWELL GANO & CO.
Agents in Chicago, HOVEY & CO.
Agents in Boston, RUBIER & CO., 33 Exchange Street.

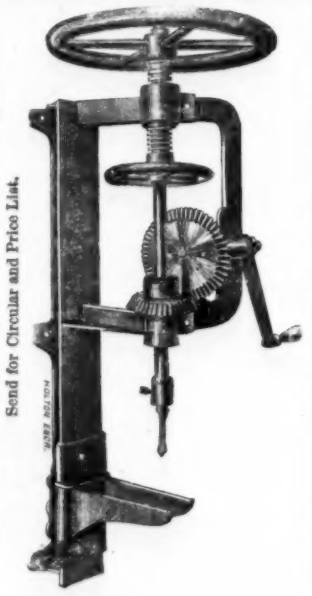
ARMS, BELL & CO.,
Manufacturers of
Carriage, Tire & Square Head Bolts.
Cold Pressed Nuts and Washers, Etc.,
YOUNGSTOWN, OHIO.
Price lists sent on application.

THE BEST IN USE

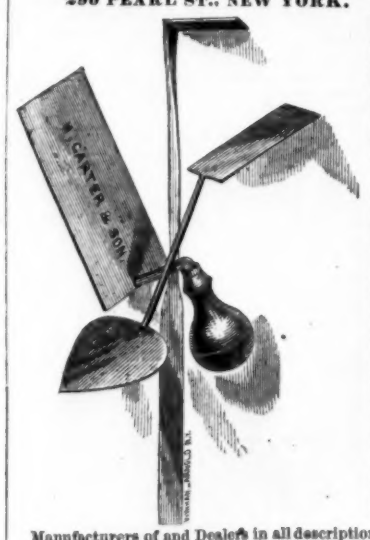
Susceptible of 32 Changes.
The Best Black Walnut Alarm Drawer in the Market.
The *Hardware Trade* is rapidly entering into its sale. A full sized drawer on brackets, for counter sample, will be furnished; should an order follow, wholesale prices only will be charged for sample.
We Sell only to the Trade.
TUCKER & DORSEY
Indianapolis, Ind.

American Rolled Nut and Tube Co.,
RICHMOND, VIRGINIA.
NUTS
From ¾ to 3 inches, hollow shafting, turnbuckles, &c., manufactured by Ostrander's celebrated process. Far better and 30 per cent. cheaper than any others made. Send for circular.
Wm. E. Tanner, President.

Blacksmiths' Hand Drill.
Manufactured by MORRELL & TIEBOUT,
Cor. of Grand & First Sts., Williamsburg, N. Y.
Send for Circular and Price List.



H. CARTER & SON,
290 PEARL ST., NEW YORK.
Moulders' and Plasterers' Tools.



Manufacturers of and Dealers in all description of Moulders' and Plasterers' Tools, and Dealers in General Hardware, Gilded Copper Weather Vanes, CARTERS' PATENT CARRIAGE LIFTING JACK, &c.

Metallurgical.

MAYNARD & VAN RENSSELAER.
CONSULTING
Mining and Metallurgical
ENGINEERS,
Experts in Iron and Analytical Chemists.
24 Cliff Street, NEW YORK,
George W Maynard. Schuyler Van Rensselaer.

DROWN & CORLISS
Analytical Chemists
And Consulting Metallurgists,
1123 Girard Street, Philadelphia.
THOMAS M. DROWN. GEORGE F. CORLISS.

BOYD ELIOT, Mechanical Engineer,
34 Beach St., near Hudson, N. Y.
Patents Solicited, Extended and Negotiated. Expert Witness in U. S. Courts.
Refers to Hon. S. S. Fisher, late Commissioner of Patents, Cincinnati, O.; Geo Gifford, Counselor in Patent Causes, 34 Beach St., N. Y.; James S. Grinnel, Chief Clerk of Patent Office, Washington, D. C.; Geo. Harding, Esq., Counselor in Patent Causes, Philadelphia Pa.; and to all the patrons of the Am. Patent Co. and Sci. Artizan.

Henderson's Patent Iron.
The **"Purified Cast Iron"** costs but about $6 per ton more than common coke Pig Iron, and when mixed with one-half wrought iron makes good Cast Steel. The Wrought Iron from common coke Pig Iron makes Cast Steel equal to that made from the best Swedish Bar Iron.
The **"Common"** Bar Iron from common coke Pig Iron is stronger, softer and tougher than Lowmoor Iron.
The **"Common"** Boiler Plates from ordinary coke Pig Iron are stronger, 50 per cent. softer and 100 per cent. tougher than Lowmoor Iron.
For Licenses to make this iron apply to
JAMES HENDERSON,
30 Broadway, NEW YORK.

The Iron-Masters' Laboratory.
Exclusively for the Analysis of Ores of Iron, Pig and Manufactured Iron, Steels Limestones Clays, Slags & Coal for Practical Metallurgical Purposes.
No. 339 Walnut Street, Philadelphia.
J. BLODGET BRITTON.
This Laboratory was established in 1866 at the instance of a number of Practical Iron-masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful and comparatively inexpensive adjunct to the Furnace Forge, and Rolling Mill.
CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron Insoluble Silicious Matter, Sulphur and Phosphorus in an Ore	$12 5
For each additional substance	1 50
For simply determining the per cent. of Pure Iron in an Ore	4 00
For determining the per cent. of pure Iron, Sulphur, and Phosphorus in a Pig Iron	15 00
For each additional substance	3 00
For determining the per cent. of Carbonate of Lime, Insoluble Silicious Matter, Oxide of Iron and Alumina in an ordinary Limestone	10 0
For each additional substance	1 50

For a Furnace per annum (determining the per cent. of Pure Iron, Insoluble Matter, Sulphur and Phosphorus in Ores; Pure Iron Sulphur and Phosphorus in Pig Irons; Carbonate of Lime, Insoluble Matter, Oxide of Iron and Alumina in Limestones; and Pure Iron and Silica in Slags—number of samples limited to 20)..300
For each additional substance (in Pig Irons $5·00) 1 5
For a larger number of samples the charge will be in proportion.
For a Forge or Rolling Mill, per annum, the charge must necessarily depend upon the size and requirements of the works.
The time required for making a full analysis is usually from three to five days

SCHOOL OF MINES,
COLUMBIA COLLEGE,
East 49th Street NEW YORK.
FACULTY:
F. A. P. BARNARD, S. T. D., LL. D., President.
T. EGLESTON, Jr., E. M., Mineralogy and Metallurgy.
FRANCIS L. VINTON, E. M., Mining Engineer.
C. F. CHANDLER, Ph. D., Analytical and Applie Chemistry.
JOHN TORREY, M. D., Ll. D, Botany.
CHARLES A. JOY, Ph. D., General Chemistry.
WILLIAM G PECK, LL. D., Mechanics and Mining Surveying.
JOHN H. VAN AMRINGE, A. M., Mathematics,
OGDEN N. ROOD, A. M., Physics.
JOHN S. NEWBERRY, M. D., Geology and Palæontology.
The plan of this school embraces a three years' course for the degree of ENGINEER OF MINES, or BACHELOR OF PHILOSOPHY.
For admission, candidates for a degree must pass an examination in Arithmetic, Algebra, Geometry and Plane Trigonometry. Persons not candidates for degrees are admitted without examination, and may pursue any or all of the subjects taught. The next session begin October 2nd, 1871. The examination for admission will be held on June 23rd and September 29th, 1871. For further information, and catalogues, apply to
DR. C. F. CHANDLER,
DEAN OF THE FACULTY.

BUY SWAIN TURBINE WATER-WHEEL.

WHY?

THEY GIVE THE BEST RESULTS, BOTH AT FULL AND PARTIAL GATE, OF ANY WHEEL IN USE, AS SHOWN BY THE RESULT OF THE TESTS MADE BY MESSRS. JAS. B. FRANCIS, HYDRAULIC ENGINEER FOR THE LOWELL COMPANIES, AND HIRAM F. MILLS, HYDRAULIC ENGINEER FOR THE LAWRENCE COMPANIES.

Illustrated Catalogues, Reports of Tests and Circulars sent on application.

Address

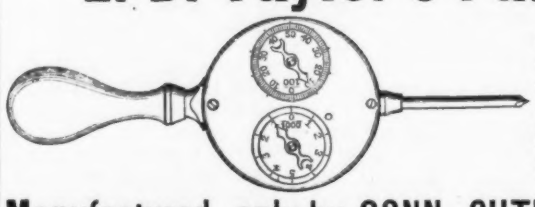
THE SWAIN TURBINE COMPANY,

Lowell, Mass.

DIRECTIONS

FOR USING

L. B. Taylor's Patent Speed Indicator.

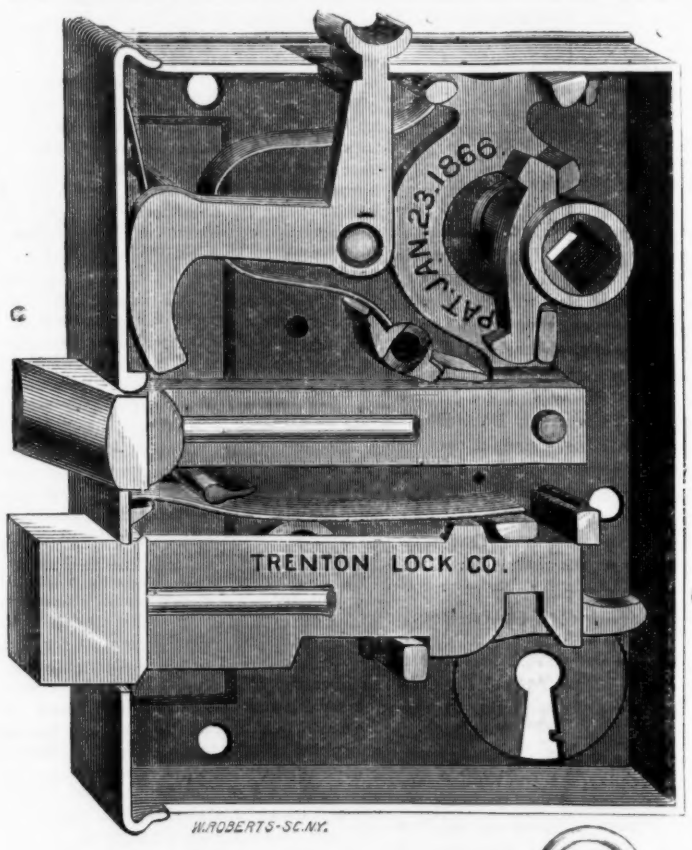


To ascertain the number of revolutions made by a shaft in any given time: Take the Indicator by the handle in the right hand, holding your watch in the left, press the point of the spindle gently against the end and center of the shaft. To every hundred revolutions of the shaft the Hundred Pointer will make one revolution, while the Thousand Pointer will indicate one number, the dial being marked into ten parts. It may be applied to a shaft revolving either to the right or left

CONN 1866 CUTLERY CO NAUGATUCK TRADE MARK

Manufactured only by CONN. CUTLERY CO., NAUGATUCK, CONN.,

TO WHOM ALL ORDERS SHOULD BE ADDRESSED.



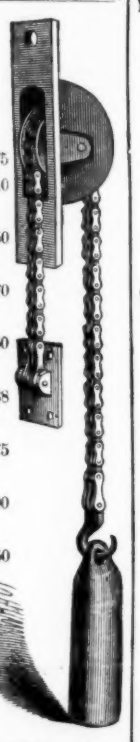
CHAIN AND PULLEY

FOR

Heavy Sash.

Copper Sash Chain	per yard	$0 75
Zinc Sash Chain	"	0 40
Hooks and Plates (2 Hooks and 2 Plates)	per set	0 50
Square Groove Noiseless Pulleys, 2 inch	per doz.	1 70
Square Groove Noiseless Pulleys, 2½ inch	"	2 60
Square Groove Noiseless Pulleys, 3 inch	"	3 38
Square Groove Noiseless Pulleys, 3½ inch	"	4 75
Square Groove Brass Face and Wheel Pulleys, 2 inch	"	5 00
Square Groove Brass Face and Wheel Pulleys, 2½ inch	"	7 50

NET CASH.



The Trenton Lock Company's Patent Reversible Rim and Mortise Locks.

The attention of Owners, Architects and Builders is requested to the construction of these Locks, which are excelled by none, either in simplicity strength or durability.

The combination of the Patent Lever and Spring renders the movement of the Latch the easiest and quickest in use.

The tails of the Bolts and Latches, being of corrugated wrought iron, are stronger than those made in any other manner. The general finish of the goods is fully equal to the best in market.

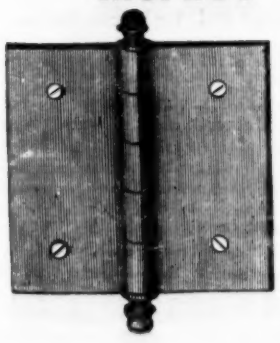
F. & L. MANY & MARSHALL,

MANUFACTURERS OF

BUILDERS' HARDWARE,

48 WARREN STREET, NEW YORK.

Mortise and Rim Locks of Every Description



Hand Plated and Pure Bronze Metal

Butts, Knobs, Escutcheons, Bell Pulls, Etc.

PLATED AND BRONZE

Butts, Flaps and Knobs for Inside Blinds,

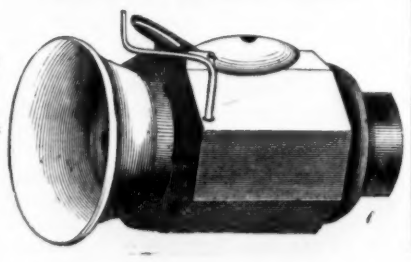
Plated and Bronze Sash Lifts,

And all Articles necessary for first-class Residences and Public Buildings.

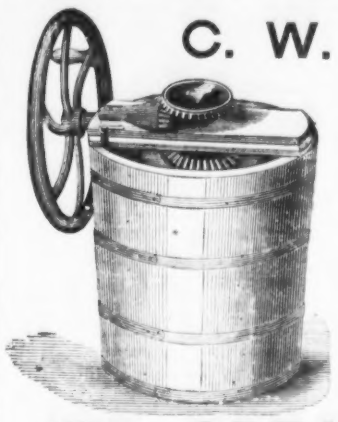
AGENCY AND DEPOT OF THE

Trenton Lock Co.

WHISTLE MOUTH-PIECE.



C. W. PACKER'S



PATENT

ICE CREAM FREEZERS.

A large number of Testimonials might be offered in recommendation of these Freezers, but the fact that they are sold by the leading houses in all the principal cities in this country, and also numbers of them are exported every year, is a sufficient guarantee of their excellence. No expense is spared to render them perfect, and recently improvements have been introduced in their manufacture, by which increased strength, durability and neatness are secured. They are made in the most substantial manner—none but the best materials are used in their construction, and the mechanical arrangements are such that they will freeze Cream, Fruits or Water Ices in the shortest possible time.

DOUBLE-ACTION FREEZER. SIZES AND PRICES.			COG-WHEEL FREEZER. SIZES AND PRICES.		
10 quarts	$15 00		2 quarts	$3 50	
15 "	$20 00; with Fly Wheel	25 00	3 "	4 50	
25 "	25 00 "	30 00	4 "	5 50	
			6 quarts		7 00
			8 "		9 00
			15 "		15 00

For sale in New York at minimum rates by Wholesale Dealers in House Furnishing Goods generally.

CHAS. W. PACKER, Manufacturer, **Philadelphia.**

COFFIN TRIMMINGS,

MANUFACTURED BY

WAYNE HARDWARE CO.,

124 Main Street, CINCINNATI, O.

E. M. CHAPIN,

MANUFACTURER OF

RULES, PLANES, GAUGES,

Levels, Hand and Bench Screws, etc., etc.

Established in 1826 by H. Chapin.

Manufacturing Address, **H. CHAPIN'S SON,**

PINE MEADOW, CONN.

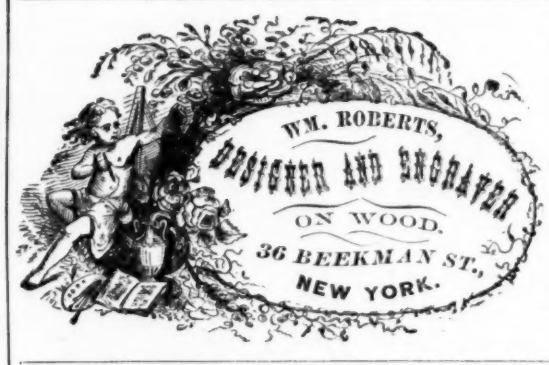
JAMES C. HAND & CO.,

COMMISSION MERCHANTS,

No. 614 & 616 Market Street, **PHILADELPHIA.**

AGENTS FOR:

William Penn, Reading and Norristown Pig Iron.
Reading Iron Co.'s (Crescent Brand) Nails, Boiler Flues &c.
Bar Iron, Plow Steel and Iron, South Easton Iron Wire.
Wm. Jessop & Sons' Steel and Norway Nail Rods.
Barrows, Savery & Co.'s Hollow Ware Castings, &c.
Fisher & Norris' "Eagle" Anvils and Vises.
Washington Mills Emery.
Heavy Hardware, &c., &c.



Established 1838.

EVERY DESCRIPTION OF ENGRAVING FOR

BOOK, CATALOGUE OR NEWSPAPER USE

done at short notice.

Machinery.

VIEWS OF BUILDINGS

A SPECIALTY.

FIRST-CLASS WORK AT LOW PRICES.

SATISFACTION GUARANTEED

DISCOUNT SCREW LIST,

[COPYRIGHTED]

Showing Net Prices at Thirteen Different Discounts, viz:

25, 30, 33 1-3, 35, 40, 40 and 5, 45, 45 and 5, 50, 50 and 5, 55, 55 and 5, 60.

This Table has been compiled with great care, and can be relied on as perfectly correct.

It will save time and money, and prove invaluable to any Bookkeeper or Salesman in the Hardware Trade.

Sent by Mail, prepaid, on receipt of price.

On fine Cardboard, 9½x15, single copy - - $1·00.
Two or more - - - - - - - - - 75 cts. each.

ADDRESS

FRANK DAYTON,

care CHARLES PARKER, 83 & 85 Duane Street, N. Y.

P. O. Box, 3107.

From The Iron Age, June 6th.

The "Discount Screw List," showing the net prices of each size at thirteen different discounts, is a useful thing for every hardware man to have. By use of it a merchant can mark both cost and selling price, without figuring the discount on each gross, as is otherwise necessary; and he is not liable to the mistakes likely to be made in hurried computations. The price is one dollar—a reasonable price when the amount of labor required in its preparation is considered. Address Frank Dayton, care Chas Parker, 83 and 85 Duane Street, New York.

The Iron Age.

New York, Thursday, March 27, 1873.

DAVID WILLIAMS . . . Publisher and Proprietor.
JAMES C. BAYLES . . . . Editor.
JOHN S. KING . . . Business Manager.

The Iron Age is published every Thursday morning, at No. 80 Beekman Street, New York, on the following terms:

SUBSCRIPTION.

Regular Weekly Edition...$4·00 a year.
Semi-Monthly..... 2·00 "
1st and 3d Weekly Nos. in each month.
Monthly..... 1·00 "
1st Weekly No. in each month.

ADVERTISING.

One square (12 lines, one inch), one insertion, $2·50; one month, $7·50; three months, $15·00; six months $25·00; one year, $40·00; payable in advance.

All communications should be addressed to

DAVID WILLIAMS, Publisher,
80 Beekman St., New York.

City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age*; also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

CONTENTS.

REMOVAL.

On or about April 1st the Office of

The Iron Age

will be removed from 80 Beekman Street to

10 Warren St.,

New York, three doors from Broadway.

Legislative Regulation of Railroad Management.

The question of whether the legislatures of the different States shall assume the regulation of the railroads operating within their jurisdiction, and, if so, in what manner, is now beginning to excite very general and thoughtful discussion. Mr. Charles Francis Adams, Jr., in an address lately delivered before a select committee of the Massachusetts Legislature, on behalf of the Board of Railroad Commissioners of that State, has done much to give point to this discussion by proposing a well considered and comprehensive plan, embodying the results of his observations and experiences. The impression prevails, and it is certainly not without foundation, that Mr. Adams fully understands his subject, and that his views have weight enough to entitle them to a hearing at least, whether they merit unconditional approval or not. Mr. Adams believes that the State cannot safely undertake to regulate the charges on railroads owned and operated by private companies, since the lobby influence which such companies could command would, sooner or later, secure them a practical control over the action of that body, and make them stronger than they now are to resist any reasonable public demand for lower passenger and freight tariffs. He believes, however, that railroads are in a great degree, if not wholly, exempt from any competition which will force them to lower their charges and furnish better and more abundant accommodations; and that it is necessary that the State should, in some way, interpose its power to protect travelers and shippers of freight from the extortion to which they are now subject. In his judgment, and that of his Associate Commissioners, the only safe policy for the Legislature to adopt is to purchase one or more lines of railroad, operate them with the closest economy, and put rates down to the lowest figures at which it is possible to do business and accumulate profit enough to pay annual interest upon the capital invested in the lines. Mr. Adams thinks that such an arrangement would leave no room for legislative dishonesty, since no one would have sufficient interest in the lines owned by the State to lobby for or against them. The benefit of such an arrangement would be found in the demonstration of the possibility of operating railways profitably at low rates of freights and fares. The theory is that other roads, operating under conditions equally favorable to economy, must put down their rates as low as those of the State roads, or stand in constant danger of being bought by the State in the public interest—their only security against such a fate being in the reduction of their tariffs and in affording the public the best accommodations at the lowest prices. Mr. Adams' views are supported by strong, logical and consistent arguments, and will probably exert an ultimate, if not an immediate, influence in shaping the policy of the Massachusetts Legislature toward the railroads of that State. The experiment proposed by Mr. Adams would be an interesting one, and, should it be tried, the result will be awaited with much interest.

In other States the battle between the people, as represented by their representatives in the Legislatures, and the lobby, as representing the railroad interest, is waged with varying fortune—the heaviest artillery being evidently on the side of the lobby. In Illinois, where the experiment of fixing the maximum of railway charges and of shareholders' profits has failed to accomplish any practical results, there is a strong feeling against the railroads, but the force of public opinion has not, as yet, accomplished much toward making regulative legislation effective; and when it comes to an argument, the railroads generally have the best of it. In this State an impracticable and foolish *pro rata* freight bill hangs fire in the Legislature, but there has been, as yet, no organized effort at Albany to break the power of the railroad lobby, which may be considered absolute. In New Jersey a bitter struggle has been in progress during the past few months between the railroads and the people over the passage of an act which would weaken the monopoly of existing roads, by opening the way to the establishment of competing lines. In Missouri, a *pro rata* freight bill has been defeated in the Legislature by a powerful lobby influence, while in Indiana a bill has lately passed regulating passenger rates, but permitting discriminations in favor of through freights, and against local traffic, at the maximum rate of 100 per cent. within distances of 20 miles. In other States there are indications of a gathering of forces to support or resist railroad legislation, but as no two States propose to adopt the same policy, we are as far as ever from reaching a solution of the great question which now engages so large a share of public attention, and which furnishes such a fertile topic for newspaper discussion.

As our readers will remember, we have steadily and consistently opposed, for several years past, any legislative interference with railroad management, believing that existing evils will work out their own cure most rapidly and certainly if left to themselves. The power invoked by the people against the railroads is one which can too easily be wrested from the people and made to serve as a protection to monopoly. As in the legend of Frankenstein, it is easier to call up a monster than to make it "down" at our bidding; and we do not need further experience to teach us that powerful and united railroad companies, having a common cause, controlling a large capital—of which there is always a surplus for bribery and corruption—and possessing a great and far-reaching political influence, can buy up legislatures for less than it costs their opponents to elect representatives to office. The confession is humiliating, but we cannot close our eyes to the truth, when we see how easy it is for skilled lobbyists to transfer their operations from State to State, and even to the Senate and House of Representatives at Washington. Clearly, we run too great a risk in attempting to regulate our railroads by enactments subject to amendment or repeal at any time, since we thereby only take our sword by the point, while its hilt is within reach of the enemy. If, therefore, we must have experimental legislation affecting railroads—and we believe the time has passed when argument can induce a change of public sentiment in this respect—there can be no doubt that the plan proposed by Mr. Adams is altogether the safest and best. A railroad operated as a public work would, if honestly and economically managed, show what could be expected from, and properly demanded of, private companies operating competing lines; and if the experiment were unsuccessful, or the ownership of the line or lines proved a burdensome responsibility, they could be sold without difficulty, and with but little loss to the State. Such a road, representing no private interests, would be beyond the reach of the lobby, for no one would have anything to make or lose by legislation affecting it, any more than from legislation affecting State or local improvements in which the chance for "jobs" is too small to make it worth while to lobby for or against them. Mr. Adams is undoubtedly right in saying that no partnership of public and private interest is possible upon terms other than disadvantageous to the former, and if the State is to have anything at all to do with the ownership and control of railroads, it must have all to do with them and private individuals nothing. We have not much faith in the ultimate results of the plan proposed by Mr. Adams, but it is the best of its kind that has been given to the public; and, if our railroads need legislative regulation, it is evident that we should first know what can be demanded of them with least danger of checking the construction of new railroads. At present our State Legislatures are blundering along without accomplishing anything, unless it be mischief; and if Mr. Adams' plan fails to realize his expectations, its failure, after fair and honest trial, may teach us that the only safe policy toward our railroads is one of non-interference.

Why We Should Not Make Iron in the United States.

We commend the following argument, published in England in 1868, to the attention of the so-called political economists who measure the prosperity of a country by the amount of its importations:

The United States of America are turning from importation of iron to the manufacture of this material. This is a somewhat premature step, unnaturally stimulated by an unreasonable tariff of import duties. A country like America has more profitable channels for the development of its natural resources than the sinking of the large amount of accumulated capital required for iron mining, and the slow returns which characterize this steady and conservative branch of industry. To cripple the whole effective power of that great nation, whose characteristic element and mainspring of existence is rapidity of industrial progress—to increase, and even to double the price of iron and steel in such a country by artificial means—must be considered the hight of political insanity. The protective tariff will create a parasitic industry in localities unsuited for its development; it will create a vested interest in these sickly glass-house plants which cannot now, and which will not in the future, maintain themselves unprotected and in a natural state of affairs; and the end of it will sooner or later be such a commercial and industrial calamity as will astonish even our strong-nerved cousins across the Atlantic.

This sounds so much like what we have read in certain journals published in this country during the past few years, that it cannot fail to provoke a good-natured smile from the reader. But let us ask, in the hope that some advocate of free trade will answer the question—what we should do now if, neglecting the development of our iron resources by means of judicious tariff legislation, we had remained dependent upon England for our supplies of iron? Would not "the whole effective power of this great "nation, whose characteristic element and "mainspring of existence is rapidity of in-"dustrial progress," be hopelessly crippled for want of iron, without which no material progress would be possible? Suppose, for example, we had had to look to England last year for the 2,400,000 tons of iron produced at home, in addition to what she furnished us, what would our iron have cost us per ton? We have no doubt there are many in this country, as well as in England, who still think that the continuance of a protective tariff on iron—which, from circumstances beyond our control, has ceased to afford any present protection, and which has never imposed any burdens upon consumers—"must be considered the hight of political insanity;" but were it not for our "parasitic" iron industries, the condition of affairs prevailing in this country during the past three or four years would have been such as to astonish even our English neighbors, whose misfortunes would have been greater than they now are. We do not propose to enter into a discussion of the question of the benefits of protective tariffs, but we have given the free traders a congenial text, and are interested in knowing what sort of a sermon they will preach upon it.

Separate Tracks for Freights and Passengers.

We are glad to notice indications of a growing conviction among the managers of our great railway lines, that an important economy would result from accommodating freight and passenger business on separate tracks. There is always an increased expense attending the operation of a line when two classes of traffic are required to be accommodated on one set of track. When the passenger business is large, demanding frequent and fast trains, the freight trains must keep out of the way and make time between stations—often traveling, when they have a chance to run at all, at a higher speed than passenger trains, whereas the greatest economy in the forwarding of freight is attained only when it can be moved at a moderate speed by trains following each other as frequently as may be necessary, and moving without interruption. With four tracks, a railroad may be so operated as to develop a capacity for the movement of freights far beyond what it is possible to attain when mixed trains are run upon two tracks, and a reduction in running expenses would soon be followed by a reduction in rates. It was long ago demonstrated that one freight railroad between Chicago and New York could easily carry all the freights that now come east by all the competing lines, without being worked to its capacity, provided sufficient depot accommodations could be secured at its termini. And we believe that when one of the through lines has provided separate tracks for its freight traffic it will be able to carry freights so cheaply and profitably that all other competing lines will be forced to adopt the same system.

New Boston.

With the return of milder weather, the people of Boston are beginning to bestir themselves in the matter of rebuilding the burnt district. During the winter months but little constructive work was possible, and the removal of the *debris* and ruins, the preparations of plans and working drawings, and the adjustment of new boundaries incident to the widening of the streets, have afforded plenty of occupation for architects, property owners and city officials. The delay thus caused, however, has not been without advantage, since the owners of property in the burnt district have had time to mature their plans, gather their resources and prepare for work, with a knowledge of what they are able to undertake, and how far their capital would permit them to go. At the present time the burnt district is said to be a scene of great activity and confusion. Thousands of men are hard at work, walls are rising, materials are accumulating, and before the end of the summer a new city will have sprung up in the place of that which was destroyed. Brick fronts will predominate, but granite, iron and marble will be well represented. In many respects, perhaps all, the new city will be at once more beautiful, more convenient and more durable than the old, and with the improved capacity for business secured by the Marginal Freight Railway and the Hoosac Tunnel, soon to be opened, Boston will probably enter with 1874 upon a new era of progress and development. The outlook is full of encouragement, and there is nothing in the situation to cast a shadow upon the hopes of the people, now that their vision is no longer smoke-obstructed.

The Saw Manufacturers' Convention.

On another page we publish an interesting account of the proceedings of the Convention of the National Association of Saw Manufacturers of the United States, held at Pittsburgh on Wednesday, Thursday and Friday of last week. The Convention was one of the most dignified and business-like trade meetings ever held in the United States, and the association thus formed promises to result in correcting many, if not all, the evils which existed in the trade, injurious alike to manufacturers, dealers and consumers. It is a noteworthy fact that such changes as were agreed upon in prices and method of selling were made with every consideration for the interest of dealers, and there was an evident disposition on the part of all present to avoid any action calculated to disturb the saw market, or fix prices above those which must be charged to secure the manufacturer a fair interest upon his investment. We are indebted to the officers and members of the Association for the exceptional courtesies extended to our representative at the meeting.

The Crystallization of Wrought Iron.

NEW YORK, March 23, 1873.

To the Editor of The Iron Age:

Agreeably with the request expressed by you in your issue of March 13, to discuss the peculiar phenomena of crystallization of iron when exposed to cold, and the greater brittleness attendant thereupon, allow me to call your attention to the fact that, from time immemorial, mechanics have entertained the belief that tools are more easily broken in cold weather than in warm. Hence, they warm their chisels on frosty winter days, knowing that if they neglect to do so they will suffer for it. Can we believe that their experience in this matter is entirely at fault or imaginary? I hardly think so. Regarding the experiments made by Mr. Oliver Williams, they seem to me to settle the point as to the unchangeability of internal structure, contested by Thorneycroft, Roebling and others, if the bar sent to you was broken at the two ends *exactly in the same manner*, having only been exposed to different degrees of temperature. In what manner shall we explain the difference in the fractures, except by assuming that the molecular structure has suffered a change? I am well aware that this subject has given rise to a good deal of discussion, and that many reasons have been put forward *pro* and *con*. But, I am not aware that, in connection with this subject, attention has ever been called to the fact that other metals are likewise subjected to a change in their molecular structure when exposed to great cold. Professor Fritzsche, in St. Petersburg, several years ago, observed that blocks of Banca tin which were transported during extraordinary cold assumed throughout a crystalline texture and a basalt-like appearance. In the interior cavities were formed, some of which had a capacity of 400 cubic centimeters. The sides of these cavities were entirely smooth and of a metallic lustre, while the other portions of the tin, which had been converted into small granules, or into brittle particles of various sizes, had assumed a dull appearance. Dr. Van Der Weyde, in the *American Artizan* of September 21, 1872, communicated a similar case of disintegration of tin, but attributes the same not to cold but to galvanic action; the tin having been stored in a moist locality and in contact with copper or brass and iron. But these are not the only cases on record. In one of the last numbers of the *Revue Hebdomadaire de Chimie* it is stated that some tin, having been sent from Rotterdam to Moscow during very cold weather, was found on arrival to have become a coarse powder consisting of crystalline grains. It had the appearance of molybdenite more than that of good tin, but an analysis showed that it contained at most 0·3 per cent. of lead and iron. The theory advanced by the writer for this change is that cold and vibration, one or both, caused it. Here we have two well authenticated cases showing tin undergoes a change in its molecular structure when exposed to great cold. Why is this? Why does iron exhibit a crystalline texture when broken at a low degree of temperature, while the same bar develops a fine, fibrous grain when heated to about 75° Fahr.? These are questions which science is unable to answer. We may well establish theories, philosophize about the constitution of matter, and bring into play the laws of crystallization, but, after all, we shall not be the wiser for that. What we want are facts—the explanation will find itself. We remember that one of our best chemists, the now deceased Runge, well known as the discoverer of the analine colors, said once, that whenever he had to exert his brains he was certain never to accomplish anything. Now, while we believe that this is going too far, we must acknowledge that there is a good deal of truth in what he said. Supposing one should establish a theory of heat, without knowing more than a few of its phenomena, what would be the result? Let us look at the books of the ancient philosophers, or at those of the philosophers of the middle ages, and we shall have answers enough to this question. So it is with the phenomenon of the crystallization of iron, which you have so ably treated. Before closing, however, let me give you a few instances of extraordinary railway accidents, that happened in Sweden in the year 1865, and which are thus related by the *Technologist*. "In the winter of 1865, which was the first during which express trains were run between Stockholm and Gothenburgh, an accident occurred which threatened to cast a mantle of mourning over the whole of Sweden. One morning in January, when the thermometer stood at —20° Fahr., his majesty, King Charles XV., left Stockholm by the ordinary express train. After proceeding for some hours at the speed of about thirty-five miles an hour, the tire of one of the wheels under the royal carriage broke in three pieces, and the carriage, having left the rail, was dragged along the ballast for a considerable distance. Providentially, no one was injured. Two days afterward, at a similar temperature, another accident occurred, also through a broken tire. The occurrence of a third and similar accident, also during this severe weather, induced the railroad authorities to decide on slackening the speed during the winter months to about twenty-five miles an hour, and since then no accident of that kind has occurred. The tires which broke in these cases were of iron, made in England, and were fastened with bolts to ordinary iron wheels. It is remarkable that the three above mentioned accidents should all have happened on the very day when the cold was severest, viz. —20° Fahr., but that none occurred during a frost in which the thermometer did not fall below —5° Fahr., a temperature by no means rare during several consecutive weeks in a Swedish winter."

Hoping that your request will call forth an interesting discussion, I remain yours, etc.,

ADOLPH OTT, Ph. D.
Chem. and Metallurgist.

Scientific and Technical Notes.

A correspondent of *Engineering*, writing from Paris, says that

M. GRAMME'S ELECTRO-MAGNETIC MOTOR

has received several improvements of late. The principle of this machine is that it produces continuous induction currents by the revolution of a circular electro-magnet before the magnetic poles of a magnet, and it collects the currents in a plane perpendicular to the poles. The following, according to the *Revue Industrielle*, is the method by which this apparatus is applied to silver electro-plating. Ordinarily, this is effected in a bath of water, of cyanide of potassium and cyanide of silver. The subjects to be

covered are suspended in the bath, a plate of silver being also suspended in the bath between each group of subjects. On the edges of the vessel are placed two channels, with insulated copper wires communicating, one with the negative pole of the battery, the other with the positive pole. All the frames which support the objects to be plated are in communication with the negative gallery, and the silver plates are connected with the positive battery. Ordinary table dishes receive a deposit of from 70 to 100 grammes of silver per dozen; they remain, generally, from 2½ to 3 hours. Generally, each bath is operated by six Bunsen elements. Electro-magnetic machines are also employed in this industry, but they have to be driven at a very high speed. The invention of M. Gramme has changed the aspect of affairs, and the celebrated establishment of Christofle, of Paris, has just decided only to employ these continuous electro-magnetic machines. The annular electro-magnet is composed of a core of soft iron on which is wound the coil. The wire is divided into a series of small bobbins, connected by a bundle of metallic plates. Each bobbin communicates with one of the plates of the bundle, and the plates are only separated from each other by a single thickness of silk. Two movable electro-magnets are mounted on one shaft. The machine weighs about 1000 pounds, the coil of the fixed magnet weighs 400 pounds, and the movable magnets 88 pounds. One horse-power is required to drive the machine, and the speed is 300 revolutions per minute. The tension of the current produced is equal to that of two ordinary Bunsen elements, and the quantity corresponds to 32 elements. The rubbers which collect the current are composed of a great number of copper wires, which are held together in a plate in the form of a broom. The elasticity of these bundles of wire gives a very soft contact, and avoids the solutions of continuity of the circuit arising from vibration. The advantages which this machine presents, in the new application which has been found for it, is, first, that only one-eighth the speed required for other machines is necessary; and, secondly, the constancy of the current, which batteries do not give in spite of the greatest care. The expense for a given weight of silver deposited is considerably less than with the battery.

Through the efforts of M. Fontaine and others, the subject of

CHEAP DOMESTIC MOTORS,

contiues to attract a great deal of attention in France. Fontaine's gas engine, of one-man power, has received the gold medal at the Lyons exposition, and a silver medal was given to the constructors; but the general introduction of this motor is checked by legal prohibitions. The type of engine worked out by M. Fontaine has neither safety valve, gauge cocks, nor water gauge; and the administration, consulting old ordinances, imposes the necessity of providing his engine with all the accessories and surety apparatus generally employed. These complications greatly increase the cost of the machine, and restrict the number of its applications. M. Fontaine observes, however, that his domestic motor constitutes, in spite of this inconvenience, the most advantageous solution of the question, as well from the consideration of first cost as from cost of maintenance. He compares this engine to electric, hydraulic, and spring motors, and proves the advantages of simplicity and economy which the Fontaine engine possesses over all others. Calculations made by the inventor estimate the daily cost of gas, for a one man engine, from 1·12 franc to 1·35 franc, according to the price of gas.

At the last meeting of the Society of Civil Engineers, Mr. Asselin recommended the use of

GLYCERINE TO PREVENT BOILER INCRUSTATIONS.

The theory is that glycerine, soluble in water in every proportion, increases the solubility of combinations of lime, and especially of the sulphate: it appears, beside, to form with these combinations soluble compounds. When the quantity of lime becomes so great that it can no longer be dissolved, nor form with the glycerine soluble combinations, it is deposited in a gelatinous substance, which never adheres to the surface of the iron plates. Moveover, the gelatinous substances thus formed are not carried with the steam into the cylinder of the engine. Mr. Asselin advises the employment of one pound of glycerine for every 300 or 400 pounds of coal burnt. This rule is by no means absolute, and must be corrected by experiment. But it appears reasonable to proportion the quantity of anti-incrustating fluid to the fuel consumed, and not to the power developed, or the area of heating surfaces. The glycerine is placed into the boilers in such a quantity, that sufficient for 15 days' supply is introduced at a time. From trials made with boilers fed with bad water, it was proved that the glycerine combined with all the salts, and left the plates perfectly clean. The objection has been raised against this mode that the glycerine may produce priming, but this objection has not been proved valid, and M. Asselin replies that insolutle bodies can only produce such an effect, and that it is not to be feared with glycerine.

Some interesting facts respecting the

SPEED OF RAILWAY TRAINS IN ENGLAND

have recently been published. The average rate of speed at which the quickest express trains travel is 47¾ miles an hour. But there are two lines on which this pace is exceeded. The ten o'clock train on the Great Northern Road reaches Peterborough at half-past eleven; the distance is 76¼ miles, and the pace 51 miles an hour. The quarter to twelve train on the Great Western makes the run to Swindon, 77¼ miles without stopping, and does it in 1 hour and 27 minutes, or at the rate 53¼ miles an hour. There are a number of other roads which make runs at the rate of from 45 to 52 miles an hour; but the journey from London to Bath by the quarter to twelve train is the quickest in the world. The distance is 107 miles, and it is done in 2 hours and 13 minutes, including a stoppage of 10 minutes at Swindon. The actual time in traveling is 2 hours and 3 minutes, something over 52 miles an hour.

Messrs. Neilson, of Summerlee, have lately completed a

NEW PATENT BLAST FURNACE,

which is said to be the most original invention introduced into the iron manufacture since the application of the hot blast by the uncle of the senior Neilson. The furnace is totally different from the flue system adopted by Mr. Ferrie at Calderbank, Mr. Pultney, the manager at Summerlee, being of opinion that the flues at the top of the furnace may with advantage be dispensed with. The whole secret of the present operation depends upon the elevation of the furnace, and the proper distribution of the gas generator. The chief deviation from the plan previously adopted is that the furnace has been elevated from 50 ft. to fully 70 ft., gradually sloping from 16½ ft. at the boshes to 12 ft. at the top, the raw material being filled upon equal layers, and the blast modulated according to circumstances. Its performances are watched with great interest and it is believed that the plan of construction will show an important economy over old methods.

Type-Setting Machines.

BY JAMES A. WHITNEY, M. E.

The type-setting machine ranks with the steam cotton picker, the field corn-husker and the steam plow as one of the greatest mechanical problems and needed inventions of the age. Like the others mentioned, it has been the subject of experiments innumerable, and more than one earnest man's life has gone out in ruin and despairing effort to produce the requisite machine. I estimate roughly the number of American type-setting projects at a score or more. An examination in the British records showed me more than sixty patents in this line, and my search, for reasons not necessary to mention here, included little or nothing of what has been produced during the past four years. Some of those projected machines are marvels of ingenuity, but too complex for extended use. The Mackay machine, especially, which is now in practical and continued use in England in printing the Warrington *Guardian*, a journal of large circulation, is covered by half-a-dozen patents, and is rather a system of mechanism than a single machine. The same remark applies to the American "Alden" machine, which I had occasion to examine a few years since, and found a marvel of inventive skill, but, a *bete noir* to a hurried printing office, although with a skilled operator it would set four thousand ems an hour. Indeed, it is useless, in the present stage of type-setting by mechanism, to expect its employment where rapid and cheap type-setting is most needed, to wit, on daily newspaper work. This is to be regretted, for each of the leading dailies of New York city expends from $100,000 to $200,000 annually for composition alone. For book work they are better adapted, and there are machines in New York to-day which have been employed for years past for this purpose. A Boston machine has also been offered for sale, and although I have not seen it in operation, the imprint from types said to have been set by it shows that good work can be done by such apparatus, thus reducing the whole question to one of speed or cost.

Most type-setting machines have been operated by keys played upon with the fingers, like those of a piano, and each directed to securing the movement of a single type from a type reservoir to a type receiver. The latter commonly receives the type set up in a continuous line, from which the matter is taken out by hand, justified, and placed on the galley. In the simpler forms of apparatus, each letter in the reservoir is kept in a row by itself, and is fed forward either by springs or gravity to a given point, where it can be pushed out by mechanism actuated by the proper key, and carried by still other devices to the receiver. The following description of the "Houston" machine, of which much was expected a few years since, will give a fair idea of the class:

"The lines of letters are arranged in grooves standing side by side in a horizontal position, and are forced to one end by weights or springs. Above the ends of these type channels is placed a receiving channel, one side of which acts a spring, and holds the type in an upright position as it is taken from the case. A shuttle plays back and forth in this receiving channel, taking the type as they are forced up one at a time, and carrying them to one end of the case, where they go into a long line. This is afterward divided and justified by hand, as in the other machines."

The "Mitchell" machine, to which I have previously referred as having been in use in New York for some years past, is furnished with a series of nearly vertical type-holders, from the lower ends of which they are pushed laterally by devices operated by the keys. The types fall upon endless carrying tapes, from which they are transferred to another tape of like character running nearly at right angles to the first, and which carries them to a peculiarly notched wheel having an intermittent motion, which conducts the types to the receiver, where they stand in a long row until taken out. This apparatus, from the necessities of its construction, has tapes about half an inch in width, and must have not only room for the lateral movement of the types, but for the turning of them around at right angles to their original position in their transfer to the second tape The machine, therefore, cannot be made narrow enough to permit a great number of types, there being but 34 keys, each representing a letter, point or space. The capitals and special type have to be put in by hand, which is done by putting them through a kind of chute which conducts them to the carrying tapes the same as if pushed by action of the keys. This limitation to the capacity of the machine is, I think, the only drawback to its extensive use, for, in watching its operations, I was struck with the ease with which it worked, and the simplicity of its construction. Feit's machine, also somewhat noted, is too complex in some respects for intelligible description without engravings. It had 40 keys and 8 type-holders, each with 36 type channels. In Brown's machine the rows of type placed upright slide in their channels down an inclined plane; a small type holder worked by hand moves across the end of the system of type channels. When the holder comes opposite the desired letter, a small pusher is worked by the finger to push it into the holder, this last being of the width of a galley, and moved from one channel to another at will.

I have indicated the above merely as examples of the leading or more notable apparatus, and not by any means as a perfect list, even of those that have given some evidence of efficiency. But no type setter that I have ever become aware of combines the essentials of one practically successful. I am satisfied, however, that the study of what has already been proposed or accomplished, combined with capital, a good deal of mechanical judgment, and a fair share of invention, would bring the matter of mechanical type setting to a satisfactory conclusion. I may here briefly indicate one or two conditions which seem to me of the first importance in securing this result.

In the first place, the movement of the keys must be to a degree independent of that of the types actuated by them, so that the operator may touch the keys without keeping watch of the feeding of the types. This was done in the Alden machine, but the cumbrous character of the apparatus nullified this particular advantage. Several of the English machines provide stops by which all the keys are prevented from moving until the type moved by the previously actuated key is fairly out of the way, but this is manifestly a hinderance to easy and rapid manipulation of the keys. Furthermore: Although the power required for moving a single type from its place in the channel is small, the collective labor of operation is great. The keys, therefore, should be made to throw into gear at each movement devices operated by independent power and applied to moving the type; the principle being analagous to that of a "local circuit" in telegraphy thrown into action by a main circuit to actuate the instrument. Further: Many machines otherwise possessed of promise have failed utterly because they broke in pieces the common type of brittle typemetal, and I doubt not from some of these valuable hints for future practice could be obtained. To obviate the difficulty it was many years since proposed to use copper type, and machines for making such type from copper wire were put in operation with all possible satisfaction, until it was found that the washing of the type to remore the ink, after printing, corroded and spoiled the type. But since that time benzine, which will not corrode, has come into quite common use for cleaning type, and the old idea could be revived at the present time with every prospect of success. It was also suggested that type be made of steel-wire, which was open to the same objection as the copper. But it is not more than four years since a French patent was issued on a machine for manufacturing steel type, which was shown to be capable of turning out 35,000 finished type per day of 12 hours.

The Statistical Annual.—The New York Daily Bulletin Association have published their second statistical annual, for the year 1872. It is a valuable work of reference, containing full tabulated reports on all the principal branches of commerce and finance, comparing the statistics of 1872 with those of several preceding years. The work is very comprehensive in its scope, gives evidence of great care in its compilation, and will be found useful to merchants and manufacturers in nearly all departments of trade and industry.

Special Notices.

Wanted.

By a Boston Hardware House occupying a leading position as manufacturers of, and dealers in, Builders' Hardware, a first-class man, to solicit trade among Builders and Architects in and about Boston, and throughout New England. Must be a person having some mechanical ideas, of good taste and good personal address, and to such a person permanent employment and liberal pay are offered. All communications strictly confidential, and must have full name and address of applicants. Address Box 1073, P. O., BOSTON.

Wanted,

A situation as Salesman, assistant Bookkeeper, Entry or Shipping Clerk. Have been in the Hardware Business, and can influence some out of town trade.

Address Box 232, PEEKSKILL, N. Y.

To Manufacturers.—The Board of Trade of Monongahela City, Pa., on the Monongahela River, invites correspondence and visits from Capitalists seeking a favorable manufacturing site. Railroad and River Transportation; Coal abundant and cheap. Address D. C. SHAW, Secretary Board of Trade, MONONGAHELA CITY, PA.

R. T. HAZELL, AUCTIONEER.

By R. T. Hazell & Co.,

Store No. 118 Chambers Street.

Our REGULAR SALES of HARDWARE, CUTLERY, FANCY GOODS, &c., will be held on TUESDAYS and FRIDAYS throughout the season.

CASH ADVANCES made on CONSIGNMENTS without additional charge.

To Manufacturers.

The advertiser is going into business ere long, and will thank manufacturers of

Stoves, Lamps, Plated Ware, Safes, Refrigerators and General Housefurnishing Hardware to forward their Catalogues and Price Lists at once.

A. REID, Buffalo, N. Y.

To Iron Masters, Mill Owners and Others.

Wante', by a practical man, a situation as foreman of bricklayers, either in the erection or repairing of Iron and Steel Works.

Address X. Y. Z., Post Office, JOLIET ILL.

Trade Register OF HARDWARE

And Kindred Interests.

1873.

GUARANTEED CIRCULATION,

Five Thousand Copies,

Amongst all good standing Hardware Dealers throughout the United States, *payment for advertisements being required only upon proof of fulfillment of our Contract.*

Will be published about February.

All Parties having anything kindred to Hardware should advertise in it.

Circulars upon application.

The Merchants & Man'frs Agency

4 Warren S., N. Y., Publishers.

CAUTION.

The public are warned against paying money in advance for the insertion of advertisements, or other matter in works published by us.

The Merchants and Manufacturers Agency,
4 Warren Street, N. Y

Special Notices.

Translations for the Vienna Exhibition.

The undersigned begs to be recommended to manufacturers for **Translations for the Vienna Exhibition** into German, French and Spanish.

C. KIRCHHOFF,
Box 2806, Commercial Editor "El Cronista," N. Y.

Wanted.

A young man as salesman in a wholesale and retail Hardware Store. Must be competent to take charge of the stock, a good salesman, and come well recommended.

Address Lock Box 374, Bridgeport, Ct.

For Sale, &c.

Charcoal Pig Iron Furnace Property at Franconia, N. H.,

FOR SALE.

This must be, considering the proximity of Wood and the known character of the Ore, the most valuable Charcoal Furnace Property that can ever come into market. It consists of the celebrated Franconia Iron Ore Bed and ore reservations in about 3600 acres in outlying lots, beside about 3000 acres of valuable wild land. Charcoal Blast Furnace in perfect order, Shops, Dwelling Houses, Store, &c., &c.

It is offered for sale because the owners do not want the care of running it, and are reluctant to have it be idle with the present and prospective demand for its product. It will be sold at a price and on terms that will give the buyer an opportunity not often to be met with.

The attention of users of Charcoal Iron who wish to establish their source of supply is directed to this property. Address *WM. E. COFFIN & CO.,*
Boston, Mass.

Hardware Store & Stock For Sale.

In the village of Medina, Orleans Co., New York.

The stock is very fine and in perfect order, and amounting to about $12,000. The business is well established, and is a desirable opportunity for any person wishing to engage in the Hardware Trade.

Liberal terms will be given for payment.

Applications must be made at once to
C. D. AVERY, Agent, Medina, N. Y.

For Sale or To Let.

The Stove Foundry lately occupied by Munsell & Thompson, situated at Elizabethport, N. J.: can be adapted to any manufacturing purpose, having coal and iron within one block, direct from the mines. Communication with New York 32 times a day by rail, and 4 times by steamboat. Within half a block of the river. Will be let for one or more terms of years. Apply to or address
A. BALTZ & CO.,
32 Broadway, N. Y.

Rolling Mills For Sale or Lease.

The *"CALVERT ROLLING MILLS,"* situated in the city of Baltimore, were withdrawn from the sale advertised on the 16th of May, and are now offered at private sale, or will be leased to responsible parties. The terms will be made advantageous. The Mills are in perfect order, and can be put in operation at short notice.

For full information address
ALEX. BROWN & SONS, BALTIMORE

For Sale

By the undersigned. Sealed bids, accompanied with a good bond as surety for the fulfillment of the bid in case the same should be accepted, will be received until April 1st, 1873, for the following described property:

The works of the Greenwood Scythe Co., situate at New Hartford, Conn., on the New Haven and Northampton and Conn. Western R. R., the latter within 100 feet of the works, and it is expected will soon have connection with the Poughkeepsie and Eastern at Millerton, so that coal can be transported at a very low price. The buildings consist of a Hammer Shop, 90x68 feet, and has three complete sets of Hammers; a Grinding House, 120x24 feet, with ten run of stones, with new spindles and all the tools for handling, etc., etc.; and a polishing and paint room of sufficient size to handle twelve thousand dozen in ten working months. The Buildings were erected in 1869, and are in good order. There is a 40 inch Leffel Wheel, under 22 feet head, with good gearing, shafting and pullies, with large and small driving belts, in readiness to start at once; also an office and workhouse, 90x28 feet, three stories high, in good order, and three Dwelling Houses and a Barn.

The water power is excellent, never falling, being on the Farmington River, and below the well known Otis and West Hill Reservoirs, the latter being under the exclusive control of the company.

The Brands, Stamps, Good Will, Lables, etc. etc., of the company, such as has been in use by them since commencing business, are also included in the sale. The terms are one-third cash on delivery of deed, and the remainder in equal payments at the expiration of 30 and 60 days from the date of the deed, secured by mortgage of the property.

For further information apply to
WM. S. SEYMOUR,
E. M. CHAPIN,
S. K. PRIEST. } Committee.
New Hartford Conn.

Fire Brick Factory.

The undersigned, being desirous of retiring from active business, offers for sale his two-third interest in the Lehigh Fire Brick Works, in Catasauqua, Pa. Everything pertaining to this establishment is in first-class condition, and the demand for the Bricks has hitherto been in excess of the capacity of the Works to supply. As the Works are situated in close contiguity to nearly fifty blast furnaces and twelve rolling mills, the demand is not likely to fall off. An active business man who can come well recommended will be dealt with liberally. Apply by letter or otherwise to
DAVID THOMAS, Catasauqua, Pa.

Rolling Mill Machinery For Sale

One train, 3 high, finishing rolls, with steam engine 75 H. P.; and balance wheel, 20,000 lbs.—complete and in good order—by

Fearing, Rodman & Swift,
23 & 25 Commercial Street, Boston.
BOSTON, Nov., 20, 1872

FOR SALE.

The Napanoch Blast Furnace, Ulster Co., N. Y. Splendid water power. Charcoal and Anthracite Coal in abundance, cheap. Apply to H. Bange,
34 Tompkins Place, BROOKLYN, N. Y.

For Sale, &c.

New York Rolling Mill,

444 West 46th Street, N. Y.

To be sold: The working plant of the above Mill, consisting of Corliss Steam Engine, 90 H. P. (with Fly Wheel about 20,000 lbs.); Boilers; Rolls for 14 in. Train; 9 in. Train, 3 high, complete; Shears, Sturtevant Blower, Turning Tools for Lathe, &c.

For further particulars apply on the premises, or to WILLIAM JESSOP & SONS, 91 John Street, N. Y.

For Sale.

Very desirable and valuable leases by the Receiver of the Chamberlain Mfg. Co., of Buffalo, N. Y.

Brick Building, 93x75 feet, four stories, large, high and well lighted. Best location for a manufacturing business in Buffalo. Water and gas, ample arches and cellars; also convenient yard room. Length of lease, fourteen (14) years. Above offer open for two (2) weeks. Address.
SHELDON T. VIELE, Receiver,
Buffalo, N. Y.

TO LEASE

On very reasonable terms,

A Large Factory,

On line of railway between New York and Philadelphia.

Just the Site and Building for a large Machine Business.

Main building 150x50 feet, with two wings for Foundry and Forge

A never-failing Water Power supplies the Factory with power.

Address, immediately,
FERGUSON,
89 White Street, New York.

For Sale! Hardware Business

In the city of Cleveland, Ohio. One of the finest Retail Stores in the city; stock fresh, all purchased the past two year—not ten dollars unsaleable goods in the entire stock. Good reasons for selling. Address A. B. C., office of *The Iron Age*, 80 Beekman St., N. Y.

For Sale.

A first-class Retail and Jobbing Hardware Business, which has been established for twenty-three years, in Bloomington, Ills. This city is one of the most flourishing in the West, being situated in a rich Agricultural Region, the center of numerous Railroads, and possessing the best educational facilities.

The proprietor, wishing to retire from business, on account of advanced years, offers this excellent property for sale, on easy terms—one-third down, and the balance on long time, with interest and good security. Amount of stock about fifteen thousand dollars. None except those meaning business need apply. Address *GEO. BRADNER,*
Bloomington, Ills.

AMERICAN KNIFE CO.,
Thomaston, Conn.,
Exclusive Manufacturers of
Steele's Pat.
FOLDING RULE AND KNIFE.
Also, Manufacturers of all kinds of
POCKET CUTLERY.
Chicago Agency, 172 State St.

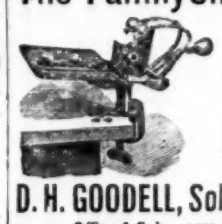
G. D. ROSEBERRY,
MANUFACTURER OF
Railroad & Mining Spikes and Bolts.
All sizes on hand.
POTTSVILLE, PA.

James S. Patterson,
Designer & Engraver on Wood,
21 Spruce Street, NEW YORK.

B. W. PERSONS,
Broker and Dealer in
Anthracite and Bituminous Coals,
SCOTCH & AMERICAN PIG IRON,
No. 39 Weybosset Street, Providence, R. I.

BIRMINGHAM, ENGLAND
SAMUEL A. GODDARD & CO.,
Commission Merchants and General Agents,
execute orders for British manufactures on the lowest terms, and collect and forward goods for a very moderate payment. Agents for the sale of North Staffordshire Iron of a standard quality.

The FamilyCherry Stoner.



The only really practical cherry stoner ever made. It does its work perfectly, without mashing the fruit.

D. H. GOODELL, Sole Manufacturer,
Office & Salesroom, 55 Chambers St., N. Y.
Works at Antrim, N. H.
Also sole manufacturer of *Turn Table* and *Lightning Apple Parers, Lightning Peach Parers* and *Climax Apple Corers.*

Trade Report.

Office of The Iron Age,
Wednesday Evening, March 26, 1873.

The appointment of Judge Richardson to succeed Mr. Boutwell in the Secretaryship of the Treasury has been the principal topic of discussion in Wall street during the past week. In financial circles the appointment is not received with favor. Mr. Richardson is a man almost unknown in public life, possessing, so far as experience is concerned, no practical knowledge of commerce and finance, and having, as yet, no claim upon the confidence of the business community. He may possess eminent qualifications for the discharge of the duties devolving upon him in the high and responsible office to which he has been promoted, but the probabilities are that, as a *protege* of Mr. Boutwell, he will content himself with carrying out the policy of his predecessor, either ignorant of, or caring but little for, the commercial interests over which the Treasury, under the present system, exercises so absolute a control. It is, perhaps, unfair to pronounce judgment upon a man's abilities until he has had a fair chance to prove them, and it is better to hope that Mr. Richardson has learned wisdom from the experiences of his official predecessor, than to despair of reforms until we shall have had an opportunity to determine whether the new incumbent is equal to the work he has assumed. There has also been some excitement in Wall street, growing out of the discovery made last week that considerable amounts of forged railway stock had been hypothecated, but it was allayed when it was discovered that only 500 forged shares of Wabash and 200 of Fort Wayne had been negotiated, and that the swindle had been nipped in the bud. The suspension of the Bull's Head bank caused a temporary disturbance in banking circles. The amount of the deficit is reported at $257,383·31. The bank's liabilities amount to $1,454,659, and its assets to $1,197,276. To-day the stockholders' committee agreed on a proposition to increase the capital stock of the bank, and allow the depositors who are most interested to take preferred stock enough to make up the full amount of the deficiency, thus placing the bank in working order again.

On Tuesday last the money market, which had previously been very stringent, became somewhat easier, and rates on call declined from 3-16 of one per cent. per day, to 7 @ 7, gold, and 7, currency, on governments as collaterals. The closing rates to-day are 1-32 and interest. Mercantile paper has moved more freely at 10 @ 12 per cent.

The gold market has been strong, with fluctuations as shown in the following table:

	Highest.	Lowest.
Thursday	115¼	115⅛
Friday	115⅝	115⅛
Saturday	115¾	115⅜
Monday	115¾	115¼
Tuesday	115⅝	115⅜
Wednesday	116¼	115⅝

In the stock market there has been but little speculation, and the market is without feature of special interest. The principal dealings have been in N. Y. Central, Erie, Rock Island, Lake Shore, Northwest, St. Paul, Pacific Mail, Union Pacific, and Western Union. The highest and lowest of to-day's quotations of active shares are given below.

The movements in foreign trade for the past week are shown by the following tables:

IMPORTS.

	1871.	1872.	1873.
Tot. for week	$1,580,607	$8,213,542	$10,997,728
Prev. reported	73,691,278	81,851,966	88,450,214
Since Jan 1	$81,271,885	$90,065,508	$99,447,942

Included in the imports of general merchandise for the week are:

Anvils	305	$3,300
Brass goods	38	4,425
Bronzes	22	1,693
Chains and anchors	297	12,432
Copper		79,416
Cutlery	184	64,287
Gas fixtures	4	294
Guns	23	5,729
Hardware	97	11,883
Iron, hoop, tons	34	2,564
Iron, pigs, tons	846	28,698
Iron, sheet, tons	166	14,249
R. R. bars	8,884	129,808
Iron cotton ties	816	1,864
Iron, tubes	516	1,318
Iron, other, tons	1,083	67,808
Lead, pigs	8,910	47,004
Metal goods	269	23,707
Needles	34	14,188
Old metal		1,866
Platina	1	1,056
Plated ware	4	211
Percussion caps	5	1,084
Saddlery	3	741
Steel	3,818	43,905
Spelter	165,750	8,015
Silverware	4	255
Tin, boxes	25,548	231,322
Tin, 2577 slabs	109,584	34,239
Wire	210	6,435
Zinc	208,280	13,055

EXPORTS, EXCLUSIVE OF SPECIE

	1871.	1872.	1873.
For the week	$5,123,187	$3,120,757	$5,260,047
Pre. reported	49,391,443	45,817,232	53,766,562
Since Jan. 1	$54,514,630	$48,937,989	$59,026,609

EXPORTS OF SPECIE.

Total for the week	$781,774
Previously reported	12,061,910
Total since January 1, 1873	$12,843,684

Government bonds have been strong throughout, with a fair demand from foreign bankers. The closing quotations of governments are given below.

The bank statement shows the associated banks to have $217,225 in lawful money above the 25 per cent. requirement, a gain of $481,475 since last week, indicating a sharp contraction of loans. The following is a comparison of the averages of the past and preceding weeks:

	March 15.	March 22.	Differences.	
Loans	$278,028,600	$275,198,800	Dec.	$2,829,800
Specie	16,946,700	17,472,300	Inc.	525,600
Circ'lation.	27,610,400	27,613,600	Inc.	3,200
Deposits	196,095,400	194,623,500	Dec.	1,471,900
Leg. Ten.	38,715,500	38,304,200	Dec.	411,300

Government bonds at the close were steady at the following quotations:

	Bid.	Asked.
U. S. Currency 6s	114¾	115
U. S. 6s, 1881, reg	118	118¼
U. S. 6s, 1881, c.	119⅞	120⅛
U. S. 6s, 5-20 reg. May and Nov.	117	117¼
U. S. 6s, 1862, c.	117	117¼
U. S. 5-20 1864, c	117	117¼
U. S. 5-20 1865, c.	117¾	118
U. S. 5-20 1867, r. Jan. and July	116⅜	116⅜
U. S. 5-20 1865, c. Jan. and July	116⅝	116¼
U. S. 5-20 c. 1867 " "	118	118⅛
U. S. 5-20 c. 1868	117⅛	117⅜
U. S. 10-40 reg.	111¾	112
U. S. 10-40 c	112	112¼
U. S. 5s 1881 reg.	114⅜	115⅛
U. S. 5s 1881 cou.	114⅞	115⅛

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	102⅜	102
Lake Shore	93⅞	93⅜
Rock Island	115⅛	114⅞
Harlem	137⅛	135
Western Union Telegraph	86⅜	86¼
Milwaukee & St. Paul	57⅛	57
Panama	115⅛	111⅛
Pacific Mail	59	56⅞
Erie	65⅝	64⅞
Ohio & Mississippi	45⅝	45⅛
Boston, Hartford & Erie	3⅛	2⅞
Union Pacific	35⅝	35⅛
C. C. & I. C.	40	39⅞
Consolidation Coal	45⅞	45⅛

GENERAL HARDWARE.

The National Association of Saw Manufacturers of the United States, of whose Convention brief mention was made in our issue of 20th instant, concluded their session which was held at the Monongahela House, Pittsburgh, at 3·30 p. m., on Friday, 21st instant. That the meeting was a very important one and brought about by the positive necessities of the trade, will be apparent to our readers when they review the list and importance of the manufacturers represented. The amount of business transacted was very large, including as it did the formation of a permanent organization, with constitution, by-laws and title, as mentioned above.

The officers of the Association consist of a President, two Vice Presidents, Secretary and Treasurer, and an Executive Committee composed of six members, with the President and Secretary, *ex officio.*

The following officers were elected, and immediately entered upon the duties of office: President, Joseph Flint, Rochester, N. Y.; First Vice President, Hamilton Disston, Philadelphia, Pa.; Second Vice President, Joseph W. Branch, St. Louis, Mo.; Secretary and Treasurer, M. McParlin, Cincinnati, Ohio.

The following gentlemen constitute the Executive Committee: Messrs. E. M. Madden, Hogan, C. W. Hubbard, E. A. Price, H. W. Peace, Henry Disston, and the President and Secretary.

The following establishments were represented and signed the constitution:

Henry Disston & Sons,
Wheeler, Madden & Clemson,
Woodrough & McParlin,
Branch, Crookes & Co.,
Hubbard, Lippincott, Bakewell & Co.,
Harvey W. Peace,
James Ohlen,
Joseph Flint & Co.,
E. C. Atkins & Co.,
W. B. Barry & Co.,
Pruyn & Lansing,
Andrews & Burbage,
E. G. Peckham,
H. & P. Mellus,
E. Andrews,
Knippenberg & Co.,
D. Price & Son,
Emerson, Ford & Co.,
Jonathan Hattersley & Son,
Curtis & Co.,
Kimball & Sanford,
Ballard, Fask & Co.,
E. M. Boynton,
Hogan & Sowden,
Monroe, Tillinghast & Co.

Letters of approval and sympathy with the objects of the meeting were received from the following manufacturers, and were read by the Secretary: Messrs. Henry R. Warner, William McNiece, A. H. Simpson, M. Schwartz, Cocker & Trevor, Porter Saw Co., American Saw Co., T. F. Cheritree & Co., Welch & Griffith, Worrall & Co., Richardson Brothers, R. Hoe & Co. and Pacific Saw Works.

A motion to abolish the warranty altogether caused considerable discussion, and although a majority would have favored its adoption, it was considered better to try, at least for the present, a modification of the present warranty. The following form was unanimously adopted: "Each Saw shall be warranted free from flaws and seams and practically true. If found defective in either of these particulars, it may be returned at shipper's expense, and if, on examination by the maker, he is satisfied the Saw is at fault, a new one may be given in exchange, or the Saw returned may be rehammered or made good, at the option of the manufacturer."

It was also unanimously resolved that "all existing consignments be closed up before the meeting of the Association in December next, and no consignments to be made in future." On the subject of price lists and discounts, it was conceded that the present was not a fitting time to enter upon any radical adjustment of that class of goods which are manufactured almost exclusively for the Hardware trade, and with this view the Convention confined themselves to correcting the evils existing in the heavier branches of the trade; evils caused as much by the lack of uniformity in lists and ignorance of each other's proceedings, as by the more natural effect of competition. A committee was appointed to prepare a new price list for Circular and Top Saws, Shingle, Veneer, Mill, Mulay, Gang, Drag, Cross Cut and Pit Saws, Fay's Scroll Saws, and repairing. This difficult work was accomplished and a new and uniform list for these goods presented by the committee, acted upon and ordered to be printed, and take effect on May 1st, the regular discount from the new list to be 10 @ 15 per cent.

It was also unanimously agreed that in order to have a uniform scale of prices from the present time until the new list goes into operation, May 1st., that all the manufacturers shall, during the interval, use Henry Disston & Sons list, for Circular, Mill, Mulay, Drag, Gang and Pit Saws, and the New Cross Cut list, which is as follows:

CROSS CUT SAWS—NEW LIST.

No. 1, Cross Cut Saws	℘ foot.,	70 cents.
Single Hook Tooth	"	75 "
Feather Edge	"	80 "
Champion	"	80 "
Tuttle's Patent	"	80 "
All Improved or Patent Teeth	"	80 "

The above to be set and sharpened and stamped with the maker's name.

No. 2, or Second Quality	℘ foot.,	54 cents.
" 2, Single Hook Tooth	"	57 "

Plain, or not set and sharpened.

The regular discount off the Saws enumerated above will be 10 @ 15 per cent.

Before the final adjournment, telegrams were received from some of the most important absentees, attesting their willingness to abide by the rules of the Convention. After a session of two days and a half, the National Association of Saw Manufacturers of the United States adjourned, to meet again on the first Wednesday in December, at Cleveland, Ohio. Before closing this notice of the first meeting of the Saw Manufacturers of the United States, it is only proper to state that the utmost harmony and good feeling prevailed from its inception to its close. Every decision arrived at was unanimous, and the members separated with a better understanding of each other, with a great many local as well as general differences satisfactorily adjusted, and with the expressed opinion and belief that this, their first Convention, was not only successful beyond the most sanguine expectations, but that it was the precurser of many pleasant reunions of the representatives of this important industry.

For the convenience of our readers, we publish herewith that portion of Henry Disston & Sons' list which was adopted for use until the revised list shall take affect, as before stated, on May 1st:

CIRCULAR SAWS.

Diameter.	Gauge.	Size of Holes	Each.	Ex. for each additional Gauge.	Prices for Beveling. Per Gauge.
4 inch	19	¾	$0·85	$0·06	
5 "	19	¾	1·00	·07	
6 "	18	¾	1·20	·09	
7 "	18	¾	1·45	·10	
8 "	18	⅞	1·75	·11	
9 "	17	⅞	2·10	·14	
10 "	16	1	2·50	·16	
12 "	15	1	3·40	·20	$0·50
14 "	15	1⅛	4·00	·24	·60
16 "	14	1⅛	4·75	·28	·70
18 "	13	1¼	5·50	·34	·80
20 "	13	1 5-16	6·50	·40	·[illegible]0
22 "	12	1 5-16	7·50	·48	1·00
24 "	11	1⅜	9·00	·55	1·20
26 "	11	1⅜	10·50	·65	1·40
28 "	10	1⅜	13·00	·80	1·60
30 "	10	1⅜	15·50	·90	1·80
32 "	10	1⅜	18·00	1·00	2·00
34 "	9	1⅜	20·50	1·20	2·20
36 "	9	1⅜	23·50	1·40	2·40
38 "	8	1⅜	28·00	1·75	2·60
40 "	8	2	32·50	2·00	3·00
42 "	8	2	37·25	2·50	3·50
44 "	7	2	44·50	3.00	3·70
46 "	7	2	53·25	3·50	3·80
48 "	7	2	61·50	4·25	4·00
50 "	6	2	71·00	5·00	4·20
52 "	6	2	84·00	5·75	4·30
54 "	5	2	96·50	7·00	4·50
56 "	5	2	117·00	8·75	4·70
58 "	4	2	138·00	10·00	4·80
60 "	4	2	160·00	12·00	5·00
62 "	4	2	186·00	14·00	5·20
64 "	4	2	213·00	16·00	5·40
66 "	3	2	245·00	18·00	5·50
68 "	3	2	277·00	20·00	5·70
70 "	3	2	314·00	22·00	5·90
72 "	3	2	356·00	24·00	6·00

TOP CIRCULAR SAWS FOR DOUBLE MILLS.

24	26	28	30	32	34	36 in.
$11·75	13.00	15·00	17·00	19·50	22·50	26·00

SHINGLE SAWS TAPERING TO 14 GAUGE.

32	34	36	38	40	42	44	46	48 in.
$22·00	26·00	31·00	36·00	43·00	55·00	70·00	80·00	90·00

MILL AND DRAG SAWS.

No. 1 Cast Steel Extra Tempered Patent Ground Mill and Drag Saws.

Length.	6 ft.	6½	7	7½
5 Gauge	$8·40	$8·65	$9·30	$9·75
6 "	7·90	8·35	8·80	9·25
7 "	7·40	7·85	8·30	8·75
8 "	6·90	7·35	7·80	8·25
9 "	6·40	6·85	7·30	7·75

No. 2 Cast Steel Patent Ground Mill and Drag Saws.

Length.	6 ft.	6½	7	7½
5 Gauge	$7·50	$8·00	$8·50	$9·00
6 "	7·00	7·50	8·00	8·50
7 "	6·50	7·00	7·50	8·00
8 "	6·25	6·75	7·25	7·75
9 "	6·00	6·50	7·00	7·50

Patent Ground Gang Saws.—10 to 14 Gauge.

No. 1, Extra tempered	$1·00 ℘ foot.
No. 2, Cast Steel	90 "

NO. 1 CAST STEEL EXTRA TEMPERED PATENT GROUND MULAY SAWS.

Length.	6 ft.			6½ ft.		
Width.	10 in.	11	12	10	11	12
4 Gauge	$13·00	$14·00	$15·00	$14·00	$15·00	$16·00
5 "	12·00	13·00	14·00	13·00	14·00	15·00
6 "	11·00	12·00	13·00	12·00	13·00	14·00
7 "	10·00	11·00	12·30	11·00	12·00	13·00
8 "	9·00	10·00	11·00	10·00	11·00	12·00
Length.	7 ft.			7½ ft.		
Width.	10 in.	11	12	10	11	12
4 Gauge	$15·00	$16·00	$17·00	$16·00	$17·00	$18·00
5 "	14·00	15·00	16·00	15·00	16·00	17·00
6 "	13·00	14·00	15·00	14·00	15·00	16·00
7 "	12·00	13·00	14·00	13·00	14·00	15·00
8 "	11·00	12·00	13·00	12·00	13·00	14·00

NO. 2 CAST STEEL PATENT GROUND MULAY SAWS.

Length.	6 ft.			6½ ft.		
Width.	10 in.	11	12	10	11	12
4 Gauge	$11·00	$12·00	$13·00	$12·00	$13·00	$14·00
5 "	10·00	11·00	12 00	11·00	12·00	13·00
6 "	9·00	10·00	11·00	10·00	11·00	12·00
7 "	8·00	9·00	10·00	9·00	10 00	11·00
8 "	7·00	8·00	9·00	8·00	9·00	10·00
Length.	7 ft.			7½ ft.		
Width.	10 in.	11	12	10	11	12
4 Gauge	$13·00	$14·00	$15·00	$14·00	$15·00	$16·00
5 "	12·00	13·00	14·00	13·00	[illegible]	15·00
6 "	11·00	12·30	13·00	12·00	13·00	14·00
7 "	10·00	11·00	12·00	11·00	12·00	13·00
8 "	9·00	10·00	11·00	10·00	11·00	12·00

Cast Steel Pit Saws .... $1·00 ℘ foot.

There is a general complaint of light transactions in both Shelf and Heavy Hardware, and the opinion is freely expressed that sales for March will fall considerably short of the same period last year. It seems hardly reasonable to expect it to be otherwise, with a market confined to legitimate transactions and almost entirely void of any speculative element.

There are few, if any, changes to note. Bartholomew's Braces are quoted discount 15 and 10 per cent. Hart, Bliven & Mead Mfg. Co.'s Cleavers, discount 45 and 10; formerly 50 and 10 per cent. Parker's Blind Butts, discount 25 and 10 per cent. Horse and Curry Cards, discount 20 and 10 per cent. Cork Lined Wood Faucets, discount 50 @ 55 and 10 per cent. Screw Hooks and Eyes, revised list, discount 60 and 10 per cent. Try Squares and T Bevels, discount 45 and 10 per cent. Coe's Genuine Wrenches discount 30 and 10 per cent. Stebbins' Molasses Gates, discount 60 and 10 per cent. There is no change to report in the condition of the Lock trade.

In foreign Hardware there is a fair trade doing for seasonable goods. Pocket Cutlery and Scissors are in good demand. Brades Trowels are quoted at discount 5 per cent. Wilkinson's Sheep Shears, discount 15 per cent., with light stocks of 5½ and 6 in., and fair supply of 4½ and 5 inch. The following are the gold prices, net, of Butterley's Grass Hooks: No. 2, $4·25; No. 3, $4·75; No. 4, $5·25; No. 5, $5·75 per dozen. The market for Coil Chain, Traces and Anvils is strong at our quotations.

Nails are firm at $5·25 for 10d. to 60d., less the usual discount for quantity. Early in the week 500 keg lots, and over, have been placed at $5, net, for 10d. The market, however, has gained considerable strength, owing to the recent advance of twenty-five cents by Western manufacturers.

Attention is directed to the advertisement, on third page, of "The Swift Mill," manufactured by Lane Brothers, Millbrook, N. Y. They manufacture over twenty different styles of Coffee, Corn, and Spice Mills, adapted to meet the wants of families, hotels, grocers, &c. These Mills have been long and favorably known to the trade. Price lists are furnished on application, the discount from which is 20 per cent.

The American Knife Company, Thomaston, Conn., are introducing a novelty in the shape of a Pocket Knife and Rule combined. The Rule, which is manufactured from fine German silver, has one regular rule joint, and when folded, can be shut down into the handle, where it lies as flush as an ordinary blade. These Knives are made with four and six inch Rules. We bespeak for this unique and useful invention a popular demand. An illustration of this Knife will be found in advertisement on our 17th page.

Graham & Haines, 88 Chambers street, have purchased T. C. Howe's interest in Howe's Patent Family Glue Pot, and are now sole proprietors of this valuable invention. The J. & E. Stevens Co. continue their manufacture. These Glue Pots are put up in one dozen packages, price $5 per dozen, discount 25 per cent. In lots of one gross, dis. 30 per cent. Graham & Haines have also taken the agency of J. F. Sloper's Washita Oil Stones and Slips, and will keep a stock of these goods in store.

Owing to an unusual demand on our columns this week, we are obliged to postpone the publication of some interesting letters on the subject of Hardware jobbing.

IRON.

American Pig.—There is very little if any change to notice in the general features of the market for American Iron. There has, perhaps, been a trifle more inquiry, but, as will be noted below, the sales are within the same range of values that have been current for several weeks past. Transactions include 500 tons No. 1 Lehigh brands, at $50; 100 tons No. 1 Carbon, at same price; 100 tons No. 2 Thomas, at $48; 200 tons No. 2 Carbon, at $47; and 4500 tons Gray Forge, at $40 at the furnace, part time. We quote: No. 1, $50; No. 2, at $46 @ $48; and Gray Forge, at $40 @ $42.

Scotch Pig.—The demand for Scotch Iron continues exceedingly light, and sales still confined to the smallest possible quantities necessary for immediate use. The value of Scotch Iron is so much higher than American that manufacturers will not use as much as formerly, and though the stock here is roughly estimated at less than 1000 tons, all told, with scarcely any on the way, except may be one or two lots by steamer, still it is ample for the present requirements of the trade. Prices are held by the importers pretty firmly at about $54 @ $55 for Eglinton, and $55 @ $56 for Glengarnock. Coltness and Gartsherrie brands are about all cleared up. Sales include 100 tons Eglinton, 100 tons Glengarnock, and 500 tons Eglinton at Philadelphia, all on private terms. There is a rumor of 100 tons Glengarnock having sold at $58, cash, but we were unable to trace it.

Following are the prices of Scotch Pig Iron in Glasgow, as reported by Messrs. J. E. Swan & Bro., under date of March 7, 1873:

GLASGOW BRANDS.

	No. 1	No. 3	No. 4
Gartsherrie	167/6	142/6	....
Coltness	170/	145/	....
Summerlee	160/	140/	145/
Langloan	170/	145/	....
Govan	140/	137/6	140/
Calder	*165/	145/	....
Shotts, Bessemer	170/	165/	....
do Ordinary	160/	145/	....
Carnbroe	155/	145/	145/
Wishaw	146/	145/	130/
Monkland	145/	142/6	....
Chapelhall	155/	145/	....
Clyde	145/	142/6	....
Quarter—Clyde	145/	142/6	140/

Glasgow Warrants 3-5, No. 1; 2-5, No. 3, g. m. b. 136/3.

*f. o. b Glasgow, 1/ per ton, extra.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

	No. 1	No. 3	No. 4
Glengarnock. Ardeer	155/	145/	....
Eglinton. Lugar. Muirkirk. Portland. — Branded Eglinton.	145/	142/6	144/
Dalmellington	145/	142/6	132/6

CURRENT RATES OF FREIGHT ON PIG IRON.

To	From Glasgow.	From Ardrossan.
New York	12/6	15/
Boston	20/	20/
New Orleans	20/	20/
Baltimore	17/	17/6
Philadelphia	20/	20/
Providence	20/	15/

Bar.—Refined from store is in fair request, and holders continue firm at the late advance. Cable advices are still encouraging to the holding interest.

Old Rails.—There has been considerable inquiry for Old Rails the past week, but transactions restricted by the firmness of holders. We note sales of 500 tons Old T at $55, cash, and 500 tons Old Double Head, part to arrive, at $59, interest added, and the balance at a private price. We quote: Double Head at $56 @ $58, and T at $55 @ $57.

Rails.—New English can still be purchased at $70, gold, which, as noted previously, is considerably below the cost of importation. Sales have taken place of 2000 tons 56 lb. Rails at that figure. American are quiet and quoted, for immediate delivery, at $80, currency, and for the summer months, $83 @ $85, currency.

Scrap.—The market has ruled very quiet the past week, but prices generally held pretty strong at about $57·50 for No. 1 from yard.

METALS.

Copper.—The transactions in Lake Copper for immediate delivery continue limited to small parcels suited to present use, but prices rule pretty firm, and sales generally have been at about ½c. higher figures than last week. For future delivery, however, the demand from manufacturers has continued active, and further large contracts consummated, though at the close they seem to have pretty well supplied themselves. There has also been a large movement in Tennessee Copper for forward delivery. The sales include about 200,000 lbs. Lake, cash lots, at 34½c. @ 35c.; 600,000 lbs., all the season, at 31½c. @ 32c.; 700,000 lbs., June to October, inclusive, at 32c.; and nearly 1,000,000 lbs. Tennessee all the year delivery, at 31c. English Copper has shown more activity, the demand stimulated by cable advices reporting an advance in England to £90 @ £91 for Chili Bar, and £98 @ £99 for Best Selected, the market here closing firm at an advance to 30¼c. @ 30½c., cash, for Best Selected. Sales, 250 tons at the above figures. We also note, in addition to above, sales of some 10,000 lbs. Old Copper, Brass, &c., at a private price. Manufactured Copper and Yellow Metal continue steady at 43c. for New Sheathing, 45c. for Bolts and Braziers, 27c. for Bronze and Yellow Metal Sheathing, and 32c. for Yellow Metal Bolts, net cash.

Tin.—The activity noticed in Straits Pig Tin in our last issue, continued during the earlier portion of the current week, and a further advance was established, but toward the close, with a falling off in the demand, the market reacted a trifle and closed about ½c. lower than the highest point reached. Holders generally are firm at the decline, though a few outside lots are offering even a shade lower. Sales include about 8500 slabs here and at Boston at 33c. @ 33½c., with small lots at 34c., closing at 33½c. English Tin has ruled quiet, but generally held firmly at 33c. Banca dull, and nominally quoted at 38c. All the above figures represent coin value. There has been a moderate movement in Plates, and prices continue firm, especially for Charcoal Tins, which are scarce, but values here are relatively lower than at foreign markets. We quote: Charcoal Tin, $12 @ $12·50; Coke Tin, $10 50 @ $11; Charcoal Terne, $10·75 @ $11·25, and Coke Terne, $9 @ $10.

Lead.—There is less activity in Pig than during last week, still there is a fair amount of trade going on, and prices continue fully as firm as heretofore. Sales include about 225 tons foreign, mostly ordinary Spanish, at 6⅝c. @ 6¾c., gold, and 200 tons Domestic at 6⅝c., gold. We quote: Ordinary Spanish and German at 6⅝c. @ 6¾c., English at 6¾c. @ 7⅛c., and Domestic, 6⅝c., all gold. Manufactured Lead continues steady at 9¼c. for Bar, 10½c. for Sheet and Pipe, and 16½c. for Tin-Lined Pipe, all less 10 per cent. to the trade.

Spelter and Zinc.—Foreign Spelter is in moderate request at fully late prices. Sales 150 tons Silesian at 7¾c. @ 7⅞c., gold. Domestic plates held at 8¾c. @ 10½c., currency. Mosselmann Sheet Zinc has been advanced to 10c., less 4 per cent., gold, from agents' hands, at which figure the market rules firm.

Antimony.—There is considerable improvement to notice in Regulus, and most holders are asking 15c., gold. Sales, 100 casks at 14c. @ 14¾c., gold.

PITTSBURGH.

March 24, 1873.—General business has been moderately active during the past week, although it was curtailed somewhat by the election, the issue being a license or no license for the sale of liquor, which caused considerable excitement, and then the weather has been stormy and disagreeable, which of course was not without its restricting outdoor operations. However, all things considered, trade has been very fair, all that could be expected under existing circumstances and surroundings. Money continues to work close, uncomfortably so, and there is a very general complaint about the difficulty in making collections, and this, as a matter of course, has a depressing and discouraging influence; our merchants and manufacturers generally, so long as this stringency continues, have no inducement to cause them to make any special effort to expand their business; they are more interested in collecting up old accounts than in making new ones. The Pig Iron trade, so far at least as Pittsburgh is concerned, continues quiet and devoid of animation; however, while the demand is confined mainly to supplying immediate wants, there is a fair volume of business in the aggregate nevertheless, and while there is no quotable change in prices, the feeling, particularly in regard to good stock, is growing firmer. As has been the case for some weeks past, the inquiry, as a rule, is mainly for the better descriptions. Consumers generally are well supplied with common and medium, and they now want good Red Short Irons for mixture; and as it is in light supply, it is held, as might be expected, with considerable tenacity; no sales have been made as yet above $43 @ $43·50, but producers generally are holding at $45. Sales of Anthracite Iron at $40 @ $42 for Gray Forge, $43 @ $44 for No. 2 Foundry, $45 @ $46 for No. 1, and extra may be quoted at $47 to $48. The supply of good Irons of all kinds in this market is light, and as they are mostly sought after, they are very firm, while of common and medium there is a good supply, though prices are well maintained. Some well informed operators are predicting that good Red Short Irons will go to $50 before long. But this, while it is possible, is barely probable. There is a very fair trade in Finished Irons, and it is improving slowly; however, it is not as brisk as it was at this time last year, although there is no special effort being made to expand. Indeed, from all that I can learn, the mills are getting all the orders they desire at present prices. Some of them are refusing, it is said, to sell largely for future delivery, and the inference is that an early advance is not improbable. The card rate at present is 4 6-10, but 4 cents is the actual selling price, and has been for some time past. It is generally conceded that there is little or no margin at present prices; also, that the raw material is higher relatively than the product, but manufacturers generally are loth to put up prices. They have been hoping for a reduction in the cost of crude Irons, but of this the prospects, to say the least, are very thin. There is a continued good demand for Nails, the advance of 25 cents per keg, as established last week, having had no perceptible effect as yet, and it is not likely that it will, as they are cheap enough at the advance. The card is now $5·25, 60 days, or $5 net cash. The Steel trade is still reported in a very satisfactory condition here; orders continue to come in pretty freely, the mills seem to have about all they can do, and prices, although unchanged, are firm, with an upward tendency. American Steel is rapidly taking the place of foreign in consequence of its being so much cheaper, and the prejudice against the former is fast dying out. The Window Glass trade is fair, although backward, caused by the long and protracted cold weather, and a firmer feeling has been developed since the recent advance in the East; it is probable that there will be an advance in the card here within a few weeks or the discount reduced, which is virtually about the same thing. Fifty and ten has been and is still regarded as the ruling discount for round lots, although some sales have been made recently at figures more in favor of buyers. The combination

among the Lock Makers which was in existence for about six months, has collapsed; it embraced nearly all the leading concerns in the country, but for some time past it had not been working smoothly, and, as stated, it has ceased to exist. The result is the discount has been advanced from 25 to 35 and 7½ cash, on the old card, and trade is reported as brisk and steadily increasing. River navigation continues good, and large shipments of iron, glass, nails, and Pittsburgh manufactures generally, are being made South and West.

BALTIMORE.

MESSRS. WYETH & BROTHER, Iron and Steel merchants, corner of South Charles and Lombard streets, report us the following prices, under date of March 25, 1873: Trade has ruled excessively quiet for the past week, and we are witnessing the unusual spectacle of dealers selling from their racks at less figures than the iron can be replaced to-day, notwithstanding mill rates are certainly hardening, and desirable makers refuse to accept orders, only on their own terms, and at advanced rates. Stocks are light and much broken, and supplies arriving slowly.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick.... 1 to 4½ wide by 1⅛ to 2 thick..	4½c. to 4¾c. per lb.
Round and square, ordinary sizes, from ⅜ to 2 inclusive..............	4½c. to 4¾c. "
Hoop Iron, 1½ wide and upward...	5¾ to 6 c. per lb.
Band Iron, from 1⅛ to 4 in. wide..	5 to 5¼c. "
Horse Shoe Iron ⅜ to 1 wide by ⅜ to ⅝ thick..............................	5¼ to 5¾c. "
Norway Nail Rods................	7¾c. to 8c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes..........	17c. "
Machinery Steel.........................	12c. "
Cast Spring Steel........................	11c. "
Homogeneous Steel Plate.............	13c. "
Perkins' Horse Shoes, per keg of 100 lbs.......	$6·25
" Mule Shoes " "	7·25
Common Horse Nails, from 14c. to 18c per pound.	

	10	9	8	6	
Putnam Horse Nails..	23	24	25	26	28c. per lb

R. R. Spikes................5⅛ by 9-16 at 5¼c per lb.

LOUISVILLE.

Mr. GEO. H. HULL, under date of March 24, writes us as follows: The market for Iron is firm, with a moderate demand. The usual time, four months, is allowed on quotations below:

HOT BLAST CHARCOAL.	
No. 1 F'dry, from Hanging Rock Ores.	$55·00 @ 56·00
" 2 " " " " ..	53·00 @ 54·00
" 1 Forge, " " " ..	45·00 @ 47·00
" 1 F'dry, from Tennessee Ores.....	54·00 @ 55·00
" 2 " " "	52·00 @ 53·00
" 1 Forge, " "	45·00 @ 47·00
" 1 F'dry, from Alabama Ores.	56·00 @ 57·00
1 " " Iron Mountain Ores.	55·00 @ 60·00
HOT BLAST STONE COAL.	
No. 1 F'dry, from Missouri Ores......	54·00 @ 55·00
2 " " " " ..	52·00 @ 53·00
" 1 Forge, " " " ..	44·00 @ 45·00
COLD BLAST CHARCOAL.	
Car Wheel from Hanging Rock Ores..	60·00 @ 65·00
" " Tennessee Ores......	56·00 @ 58·00
" " Alabama Ores........	60·00 @ 62·00
" " Georgia Ores.........	60·00 @ 62·00
" " Missouri Ores........	58·00 @ 60·00
" " Kentucky	58·00 @ 60·00

BOSTON.

MARCH 22.—The demand for Iron continues steady, but without any special activity, and prices are very firm, with an upward tendency. $105 is about the bottom prices for refined bar, and dealers, as a rule, are not anxious to sell at that figure; certainly they have no disposition to make much effort to obtain business. The demand for Pig Iron has been fair. Scotch is very high, and is almost entirely neglected, consumers using American wherever they can. There is no Gartscherrie in the market. We quote yard lots of American Pig Iron at $55 @ $58 per ton, including No. 2 extra at $53 @ $54, and No. 1 at $56 @ 58. Scotch is held firmly. We quote Eglinton at $60, Coltness at $70, Charcoal at $57 @ $60.—*Commercial Bulletin.*

CHICAGO.

MAR. 20.—*Hardware*—There is rather more doing, but the market is somewhat weak and lower for common and desirable grades. Axes 50c lower, and Locks are somewhat changed in price. Carriage Bolts selling at 60 and 5 off. *Iron, Steel and Nails*—Merchant Bar Iron is selling at 4½c. with an advancing market. Nails are firm at $5·50 rates and ⅛ off on 100 keg lots. *Horse Nails*—Are steady at 21c. for 8d. *Pig Iron*—The market is steady and unchanged, and the range is from $60 to $65 per ton for Scotch. American is steady and firm at the rates ruling in our quotations; the tendency is still up. *Old Metals*—Are scarce and rather firm, especially for Tin. Old material is higher, with sales at $40 for No. 1 Wrought Iron and $38 for heavy Cast Iron. *Tinners' Stock*—The market is steady with an advancing tendency, all grades advancing 50c. per box during the past week. There is a good business being transacted in all kinds of Metals generally. Prices have advanced to 42c. to 44c. for Block Tin. Our quotations are really below the English market. The stocks of Plate are very light and held with much firmness. All the elements of strength are conspicuous at present in England.—*Jour. of Com.*

FOREIGN.

GREAT BRITAIN.

Messrs. J. Berger Spence & Co., London, Glasgow and Manchester, under date of March 10, 1873, report:

Metals.—The business in this market during the past week has been active, and the opening of the spring shipping season is having its usual vivifying effect on rates generally. In Scotch Pig Iron the price of warrants have receded during the week, but the market closes at an advance on the lowest. Shipments, although under those for the same period in 1872, are still considerable. Sales of Middlesborough Pig Iron continue on a limited scale, through deliveries being now required on account of prior engagements entered into by the smelters. There is again a slight decrease in the amount of Iron in makers' stocks for the month of February. Another advance has been made in the price of Manufactured Iron, and Bars are quoted at £14. 10/ per ton, with makers averse to enter any but limited quantities. The dullness which for so long a time has characterized Copper has now given way to a more lively feeling, and it is expected the improvement will be a permanent one. Tin continues in brisk demand, and sales of Straits have been effected at higher rates. English is unaltered. The dearness and scarcity of ores keep up the value of Lead; and the same remarks apply to Spelter, which has further improved during the week, and is expected may go still higher. A lot of 120 tons of English Sheet Zinc was offered for sale in London last week, of which 60 tons sold languidly at from £31. 15/ to £31.

IRON.—"Ayresome" Yorkshire Pig Iron, nominal, No. 1, 129/6; No. 2, 124/6; No. 3, 122/; No. 4 (Foundry), 121/; No. 4 (Forge), 121/ net cash, or 2/ extra 4 months' bills. Scotch Pig Warrants, 136/ to 137/6. Staffordshire Bars, £14. 10/ to £15 Hoop Iron, £15 to £15. 10/. Gas Tubes, 25 per cent. off new list. Boiler Tubes, 10 per cent. premium.

COPPER.—Nominal. English Tough Ingot, £93 to £94. Chili Bars, £85. 10/ to £86.

TIN.—English Ingot, £146 to £147. Straits, £145 to £146.

TIN PLATES.—Best Coke, I. C., 38/ to 40/; Charcoal, I. C., 43/ to 45/ per box.

LEAD.—Best English Soft Pig, £23 to £23. 10/. Refined Red Lead, £25 to £27.

ANTIMONY.—French Star, £62 to £64.

SPELTER.—Silesian, special brands, £27. 10/ to £28. English, best brands, £28.

Rautenberg, Schmidt & Co.'s Singapore Tin and Coal Report.

(*Translated for The Iron Age.*)

SINGAPORE, January 30, 1873.—*Tin.*—The receipts have been light, while a lively demand prevailed during the first few days of the fortnight, and sales were made up to $36⅝ the picul, equal to £148. 9/6 per ton, cost and freight. Subsequently, however, later discouraging London reports depressed values to $36 and $36¼, equal to £145. 19/7 to £146. 19/6. The market then became inanimate and closed weak at $36 to $35⅝, equal to £145. 19/7 to £144. 19/5 per ton. *Coal.*—Cardiff in active request, but nothing done; we quote the same $12 per ton nominally; West Hartlepool also attracts more attention.

Siemssen & Co.'s Chinese Metal and Coal Report.

(*Translated for The Iron Age.*)

SHANGHAE, Jan. 16, 1873.—*Metals.*—There has been hardly anything transpired in them, if we except *Lead.* The nominal quotation for Nail Iron is 2·90 to 3·50 taels; Rod Iron, 2·70 to 3·20; Lead, L B, 4·85 to 4·90 taels; common brands, 4·65 to 4·80; Tin Plates nominal at 8 taels; English Quicksilver, 76 to 77; American, 79 to 80, nominally. *Coal.*—Nothing of moment has occurred. The following are the quotations: Cardiff, 9·50 to 9·75 taels; English, 9·50. American, 9·50; Sydney, 9·25; New Castle (New South Wales), 9; Japanese, 4·75, and Formosa, 5 taels per ton.

Arnhold, Karberg & Co.'s Chinese Metal Review.

(*Translated for The Iron Age.*)

HONG KONG, Jan. 22, 1873.—*Metals*—The favorable opinion lately noticeable in our market has been fully upheld during the fortnight, and considerable amounts have moved off in a satisfactory manner at firm prices; but most holders keep out of the market, counting, as they do, upon an ulterior improvement. The sales have been the following: 5880 piculs Nail Iron, 1500 piculs Swedish Rod Iron, 420 piculs Hoop Iron, 850 tubs Steel, 1260 piculs Common Lead, 100 piculs L. B., 150 piculs Spelter, 250 boxes Tin Plates and 210 piculs California Quicksilver. The ruling prices this day are the following: Nail Iron, $3·50 to $3·80; Rod Iron, English, $3·60 to $3·85; Swedish, $4·40 to $4·60; Hoop Iron, $4·60 to $4·80; Iron Wire, $7·50 to $8·75, all per picul. Steel, $4·20 to $4·75 per tub; Common Lead, $6·50 to $6·60; L. B., $6·60 to $6·75; W. B., $6·90 to $7; Spelter $35 to $36 per picul; Tin Plates, $8·75 to $9·75 per box, English Quicksilver, $103 to $105; California, $105 to $107 per picul.

MacLaine, Watson & Co.'s Batavia Metal and Coal Report.

(*Condensed for The Iron Age.*)

BATAVIA, (JAVA), Jan. 22, 1873.—*Metals.*—Swedish Iron saleable at 16⅛ guilders per picul. Stocks of English are moderate, but the demand is generally inactive. Copper Sheathing maintains its value. Steel has been sold at 12½ guilders per tub. *Tin.*—The next sale of about 8000 piculs Billiton will be held on the 3d of February. *Coals* are in active demand, but without supplies. Exchange 11·47½ to 11·55 guilders to the pound sterling.

Clark, Spence & Co.'s Ceylon Plumbago and Coal Report.

(*Condensed for The Iron Age.*)

POINT DE GALLE, Feb. 6, 1873.—*Plumbago.*—Select qualities are in demand, and scarce. Some 60 tons of different descriptions of Plumbago are now loading here per Francis for New York. The Rapido has sailed for Philadelphia. The Plumbago quotations are the following: Lump, £25 to £28 per ton; freight, 50/ per 20 cwts., or be it free on board with freight, and the exchange as par, £27. 10/ to £30. 10/ per ton; chips, £12 to £15, or be it £14. 10/ to £17. 10/; and dust, £5 to £8, or be it £7. 10/ to £10. 10/. In *Coals* there is no altera ion to report. We can only report, that seeking cargoes would find a favorable market at fully our last quotations of 46/ to 42/ ex ship. *Exchange*, 1/ 11½d. to 1/ 11¾d., the rupee.

The Prussian Metal and Coal Market.

(*Translated for The Iron Age from the Frankfurter Zeitung.*)

BERLIN, Feb. 28, 1873.—*Metals*—The market has been firm, but very quiet. The demand for local requirements has been steady; larger parcels, however, there is little disposition to buy. *Pig Iron* has been dealt in to but a moderate extent at unaltered rates, thus: Good and best brands of Scotch at 87 to 96 silvergroschen; English at 76 to 79; Silesian Coke Iron at 75 to 76, and Charcoal Iron at 84 to 86 the 50 kilos, at the works. Rails for rolling purposes are 3¼ to 3⅛ thalers; Rolling Iron, 5 5-6 to 6; Boiler Plates, 7½ to 8; and thin Plates, 8½ to 9 per cwt. in large lots. *Copper* is quiet; good sorts of English and Chili Copper are 32 to 32½ thalers, and in some instances a trifle better. *Tin* is weak; Banca, 51 to 51½; Billiton, 49 to 49½ thalers, and prime Lamb 49 to 49½ per cwt. There is a growing demand for *Spelter.* The London stock has dwindled down to a minimum, and the English are driven into the German markets. Thus W. H. Giesche's Heirs' brand, in large lots, commands 8¾ thalers, and the lower Silesian bring ⅛ to 5-12 less per cwt. *Lead* is unaltered; Tarnowitz, Clausthal and Saxonian, 7 1-12 to 7¾ thalers per cwt., and in some cases a trifle higher. English Nut Coal brings as much as 35 thalers; Lump, 33 the 40 hectoliters; Silesian and Westphalia smelting, 28 to 36 silbergroschen per cwt., delivered here.

The Hamburgh Metal Market.

(*Translated for The Iron Age from the "Borsenhalle."*)

HAMBURG, March 7, 1873.—*Lead* remains unchanged at the high rates ruling. German, 23 to 24 marks; English, 24; Spanish, of Rein & Co., 24½. *Copper* is now held for a higher price; Northern sorts, 97 to 106. *Tin* is well sustained, although the demand is local and on a small scale; Banca, 1·65; English, 1·55, and rods, 1·60 marks. *Spelter.*—The rise in this metal has been making further headway, dealings being both animated and extensive, part on the spot and part to arrive, footing up for the week upward of 12,000 cwts. The market closes at 27 on the spot and 26·80 to arrive. P. S.—Per telegraph to the *Frankfurter Zeitung*: HAMBURG, March 10.—Spelter firm; sold 1000 cwts., common brands, at 27 marks, on the spot.

The Chili Copper Market.

(*H. Fischer & Co.'s Report, Translated for The Iron Age*).

VALPARAISO, Feb. 14, 1873.—*Copper.*—Prices, from here, have remained unaltered, and whatever was offering at $19¼ per quintal has been promptly taken. For Guayacan, sellers have been induced to allow a slight concession, and 5000 quintals have sold at $19¾, free on board; larger sales are not likely to be made till we have some further European accounts, which will rule the further course of prices. The rates may be particularized as follows: 2151 quintals *Bars* at $19¼ on shore, from here; 5114 do. do., at $19⅜, on board at Guayacan, and 4000 quintals regulus, at $8⅛ for 50 per cent., free on board from Carrizal. General freight range £2. 10/ to £3. 5/ per ton. Exchange, 60 days 44⅛ to 44½d.; 90 days, 44½ to 44¾d.

(*D. Shutte & Co.'s Report, Condensed for The Iron Age.*)

VALPARAISO, Feb. 15, 1873.—*Copper Produce, Bars.*—Shippers have shown sufficient disposition to buy and have taken all that was offering at previous quotations, for common bars. Urmeneta ruling proportionately high at the time of our last issue, gave way to the extent of 25c. per quintal, although in good demand, too. Sales 2200 quintals at $19¼ on shore here, and 5200 Urmeneta at $19⅜, free on board at Guayacan. *Regulus* being scarce, with a good demand, its value has risen to $8⅛ for 50 per cent., at which price 4000 quintals, free on board Carrizal, changed hands.

Latest Java Tin Report.

(*J. Peet & Co.'s Review, Condensed for The Iron Age.*)

BATAVIA, Feb. 1, 1873.—*Billiton Tin.*—On the 3d instant 8000 piculs will again be sold at auction by the Billiton company; prices will not rule high. We are of opinion that the immense mines of this metal lately discovered in New South Wales, Australia, will in time affect the price of this article.

TIN EXPORTS FROM JAVA TO THE UNITED STATES (ATLANTIC.)

(*Extracted from Dummler & Co.'s Annual Batavia Review.*)

	Piculs.		Piculs.
1863	..	1868	1,250
1864	814	1869	2,077
1865	200	1870	1,554
1866	360	1871	9,215
1867	1,900	1872	4,019

Latest Calcutta Metal Telegram, via London.

(*Extracted for The Iron Age, from Ernsthausen and Oesterley's Message.*)

CALCUTTA, March 11, 1873.—*Copper.*—English tile, 35 rupees. *Spelter.*—Real Silesian, 10; good hard quality, 7·6. *Yellow Metal*—31·4 rupees.

Latest Berlin Metal Market.

(*Transated for The Iron Age, from the Frankfurter Zeitung.*)

BERLIN, March 7, 1873.—Although the dealings of the week were for local requirements only, prices are both firmer and better. *Pig Iron*—Good and best brands Scotch, 89 to 98 silbergroschen; English, 76 to 79; Silesian coke iron, 77 to 78; charcoal do., 85 to 87 the 50 kilos, spot, at the works. Rails for rolling purposes, 3 5-12 to 3½ thalers; rolling iron, 5 5-6 to 6 1-6; boiler plates, 7⅜ to 8 1-6, and thin plates 8⅜ to 9 1-6 per cwt. in larger lots. *Copper* is unaltered; good sorts English and Chili, 32 to 32½ thalers the cwt. and higher in some few instances. *Tin* is rising in consequence of the Dutch improvement of 3 guilders. We quote Banca, 52 to 52⅛; Billiton, 50 to 50½, and prime Lamb, 50 to 50½ thalers per cwt., and even higher in some cases. *Spelter* better again, W. H. Giesche's Heirs in larger parcels, 9 thalers, low Silesian sorts ⅛ to 5-12 below this per cwt. *Lead* is in demand and higher. Tarnowitz, Clausthal and Saxonian, 7⅝ to 8 thalers per cwt., and in some dealings even more has been paid.

Latest Dutch Tin Market.

(*Translated for the Iron Age, from the Nederlandsche Courant.*")

ROTTERDAM, March 11, 1873.—*Tin.*—An animated demand has prevailed for tin since our last, and large transactions have taken place at advancing prices. Banca sold for present delivery at 84 to 86, and for delivery from the coming auction at 83 to 85 guilders. Billiton has been in brisk demand for immediate shipment, and sold at 82, and thence up to 84½, and 85 has since been offered in vain. A fair business has also been doing in Billiton, "to arrive" per steamer, at 82 to 83½ guilders. From one day to another we are awaiting the announcement of the auction, date and quantity.

Latest Vienna Exhibition Notes.

(*Translated for The Iron Age from the Westliche Anzeiger.*)

VIENNA, March 5, 1873.—Between the industrial palace and the engine hall, in the space between the two produce halls, a handsome spacious pavilion is now being erected, about which the public press has hitherto received no data. We are now informed, however, that the Secretary of the Exchequer and Minister of Agriculture will fill it with their exhibitions. The former official will, in the first place, show the productions of Austria's salt works; thus the famous Wieliczka Salines will exhibit their great variety of salt, displayed in groups truly magnificent, and facing them will be found the specimens taken from the Alpine Salines. The cavernous crystals and stalactites of Wieliczka will for the first time emerge in glittering array from their subterranean vaults to the bright daylight, the inimitable natural statues and candelabra and so forth, so often admired in the celebrated caverns. The tobacco exhibition of the government monopoly will be no less attractively fitted up in the preferential locality assigned to it, a tasteful arrangement having been planned. The Department of Agriculture will shine forth with a variety of models and productions not hitherto seen at any International Fair. Added to this, from the mines of Perzibram there will be a colossal lump of silver ore, and a cauldron holding 1000 cwts. quicksilver from Idria, upon which a cannon-ball of a hundred pounds weight will float. The pavilion will be surrounded, in the open air, by the productions of Austrian forests. This department will show all kinds of timber for shipbuilding purposes, and it will, moreover, exhibit a ridge of mountain forest from Karst in its desolate aspect of forest destruction, and another ridge with the young trees covering the waste. Next to it will be the experimental groups of agriculture, grape culture and silk cultivation, and a gigantic map will graphically explain the variety of soil comprised within the monarchy. No less interesting will be an exhibition, in the same locality, of several hundred plows; from the most ancient times to the present age, collected all over the world, thus showing the gradual progress of mankind in this, its most important implement of civilization. This extraordinary collection of plows, ancient and modern, is headed by two Egyptian ones, of the venerable age of upward of 6000 years, derived from the Pyramids, and preserved till now in the Museum of Antiquities of Bulak. There will be seen, also, the identical plow handled by the Emperor Joseph II, in Moravia, as well as those practically used by the most celebrated husbandmen of modern times, an exhibition never hitherto attempted.

A large area will be devoted to the important art of hydraulics and the system of drainage and irrigation, as practiced by the various nations of the globe.

Sale of Scranton Coal—An Advance in Prices.

The regular monthly auction sale of Scranton coal took place at noon to-day (Wednesday) at the salesrooms of the Delaware, Lackawanna and Western Railroad Company, No. 26 Exchange Place, John H. Draper being the auctioneer.

One hundred thousand tons of the usual grades were offered on the customary conditions of sale, which were read by the auctioneer. There was an extremely large attendance, and the bidding was unusually spirited. Five thousand tons of lump were first offered and taken at one price, $4·17½. Ten thousand tons of steamboat was then put up, and went at one price—$4·15. Twenty thousand tons of grate was next in order, and sold at from $4·30 to $4·40. Fifteen thousand tons egg ranged from $4·52½ to $4·60. Thirty-five thousand tons of stove brought from $5 to $5·17½. Fifteen thousand tons of chestnut sold at $4·17½ to $4·20.

The following are the prices obtained, as compared with those of the last sale:

	Tons.	Feb. 26.	March 26.
Lump......	5,000	$3·85 @3·92½	$4·17½@ —
Steamboat..	10,000	4·02½@4·20	4·15 @ —
Grate.......	20,000	4·15 @4·25	4·30 @4·40
Egg.........	15,000	4·45 @ —	4·52½@4·60
Stove.......	35,000	5·20 @5·27½	5·00 @5·17½
Chestnut...	15,000	3·95 @4·00	4·17½@4·20
	100,000		

There was an average advance on every variety except stove, which was lower on account of the large quantity offered. The average increase on lump was 28¼ cents per ton; on steamboat, 3¾ cents; on grate, 15 cents; on egg, 11¼ cents; on chestnut, 22½ cents. Stove declined, on an average, 15 cents per ton.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending March 25, 1873:

Hardware.

Amson J. & Co.
Cases, 1
Althorf, Bergmann & Co.
Cases, 5
Boker Hermann & Co.
Cases, 11
Casks, 3
Chains, cks., 7
Nails, cks., 2
Screws, cases, 1
Mdse. pkgs.. 2
Barton, Alexander & Waller,
Cases, 2
Beam & Murray,
Cases, 3
Chains, cks., 35
Mdse. pkgs., 7
Bodenheim, Meyer & Co.
Mdse. pkgs., 6
Coffin, Lee & Co.
Cases, 2
Casks, 7
Chains, cks., 4
Anvils, 20
Cooper, Harris & Hodgkins,
Cases, 1
Campbell H. P.
Casks, 15
Dux W. M.
Cases, 2
Dickinson Henry
Casks, 7
Drexel, Morgan & Co.
Files, cks., 3
Dodsworth F.
Cases, 4
Fuller Bros.
Packages, 10
Frith Ewd.
Anvils, cks., 10
Field A. & Co.
Cases, 2
Mdse. pkgs., 77
Packages, 36
Hart, Bliven & Mead Mfg. Co.
Mdse. pkgs., 2
Hilger E. & Sons,
Mdse. pkgs., 20
Chains, cks., 17
Harmar Wm. & Co.
Cases, 4
Casks, 1
Jeselson P.
Cases, 3
Kausche John,
Cases, 5
Lau & Garlichs,
Mdse. pkgs., 3
Lawton Bros.
Casks, 1
Laughland & Co.
Wire, bxs., 4; cks., 26
Moss F. W.
Files, cks., 8
Mason John W. & Co.
Wire rope, coils, 6
Casks, 14
Many F. L. & Marshall,
Chains, casks, 2
O'Connor Bros. & Co.
Casks, 1
Packard, Goff & Co.
Cases, 3
Page E. & Co.
Wire, bdls., 7327
Phelps, Bloom & Brown,
Cases, 3
Peace Chas. Jr.
Cases, 5
Rosenthal J. & Co.
Packages, 3
Russell & Erwin Mfg. Co.
Files, cks., 4
Cases, 2
Schuyler, Hartley & Graham,
Guns, cases, 4
Stout Louis W.
Cases, 3
Sussfield, Lorch & Co.
Cases, 2
Shaw Jas. M.
Casks, 1
Turnor R. A.
Casks, 3
Cases, 4
Anvils, 15
Tillotson L. G. & Co.
Gal. wire, lots, 441
Tyron E. K. & Co.
Per. caps, cases, 3
Van Wart & McCoy
Cases, 7
Casks, 10
Von Cleff Bros.
Mdse. pkgs., 20
Wiebusch F.
Mdse. pkgs., 8
Wild Mark
Cutlery, cks., 1
Ward Asline,
Casks, 7
Order.
Casks, 5
Cases, 15
Packages, 3
Files, cks., 6

Iron.

Bruce & Cook,
Coiled rods, bdls., 237
Bundles, 744
Brown Bros. & Co.
Bundles, 267
Bars, 3315
Bussing, Crocker & Co.
Pig, tons, 748
Burdett & Pond,
Scrap, tons, 25
Congreve Chas. & Son,
Rails, 840
Fish plates, bdls., 200
Darrell & Co.
Scrap, bdls., 31
Barrels, 24
Casks, 5
Pieces, 33
Egleston Bros. & Co.
Hoop, bdls., 807
Egleston M. & Co.
Rods, bdls., 172
Freidricks Robt.
Casks, 9
Griswold J. A. & Co.
Pig, tons, 260
Howes G. & Co.
R. R. bars, 21
Henderson Bros.
Pig, tons, 200
Jackson & Chace,
Hoop, bdls., 400
Grooved, bdls., 41
Jarvis Geo. E.
Rails, 1197
Laughland & Co.
Haybands, bdls., 719
Lang W. Bailey & Co.
Bundles, 200
Bars, 232
Rails, 399
Lambert & Smith,
Scrap, tons, 32
Milliken S. Jr.,
Rods, bdls., 1141
Oelrichs & Co.
Casks, 1604
Oothout Wm.
Hoop, bdls., 680
Bars, bdls., 160
Phelps, Dodge & Co.
Sheet, bdls., 155
Piersons & Co.
Rods, bdls., 207
Page E. & Co.
Bars, 18,750
Smith G. G. & Co.
Bars, 389
Sheets, 175; bdls., 94
Taylor M. & Co.
Scrap, lbs., 560,000
Tedin, Nordenfelt & Co.
Rails, 1221
West Bradley Mfg. Co.
Rods, bdls., 124
Whitney A. R.
Bars, 2399
Angle bars, 100
Order
Bundles, 1471
R. R. bars, 35,276
Sheet, bdls., 1334
Pig, tons, 112¾; lots, 1
Hoop, bdls., 102
Bars, 4431; bdls., 304
Fish plates, bdls, 1820
Old rails, 1639

Steel.

Abbott & Howard,
Cases, 8
Cockayne J. W.
Bundles, 30
Carr & Rockafellar,
Cases, 8
Congreve Chas. & Son,
Rails, 2793
Drexel, Morgan & Co.
Rails, 2234
Hugill Chas.
Cases, 6
Bundles, 87
Bars, 4
Hogan John,
Bundles, 89
Cases, 84
Casks, 5
Hearth & Co.
Cases, 8
Bundles, 1
Jackson Wm.
Packages, 110
Moss F. W.
Cases, 9
Bundles, 29
Bars, 11
Naylor & Co.
Axles, 30
Tires, 61
Bars, 56
Fish plates, bdls., 267
Cases, 21
Piersons & Co.
Bundles, 645
Prosser T. & Sons,
Mdse. pkgs., 87
Slagg Joseph,
Mdse. pkgs., 25
Cases, 40
Sanderson Geo. & Co.
Cases, 6
Casks, 3
Bundles, 43
Vose, Dinsmore & Co.
Mdse. pkgs., 8
Van Wart & McCoy.
Bundles, 480
Wardlow W. C.
Bundles, 144
Order.
Bundles, 885
Rails, 2628
Bessemer rails, 1266

Metals.

Amsinck L. E. & Co.
Lead, pigs, 1005
Barling & Davis,
Packages, 70
Bruce & Cook,
Tin, ingots, 600
Tin plates, bxs., 130
Baring Bros. & Co.
Lead, pigs, 2497
Brown Bros. & Co.
Plumbago, bbls., 122
Dickerson J. S. & Co.
Tin plates, bxs., 4586
Darrell & Co.
Brass, cks., 2
Grinnell, Minturn & Co.
Sheathing, cases, 70
Hagemeyer & Brunn.
Scrap, cks., 28; bbls., 21
Harley Geo.
Scrap, pkgs., 27
Lamarche H.
Lam. zinc, cks., 100
Naylor & Co.
Tin plates, bxs., 950
Phelps, Dodge & Co.
Tin plates, bxs., 14,413
Copper, cks., 1296
Zinc, bbls., 150
Lam. zinc, cks., 260
Order.
Tin, ingots, 1940; slabs, 412
Tin plates, bxs., 19,645
Sheathing, copper, cs. 10
Spelter, plates, 6154
Lead, pigs, 1726; pcs., 788; cks., 29; slabs, 4057
Scrap, cks., 67
Black lead, cks., 36
Ingot copper, cks, 151
Copper, cks, 315
Zinc, cks., 14

Our English Letter.

Review of the British Iron, Coal, and Hardware Trades.

(*From our Special Correspondent.*)

SHEFFIELD, ENG., March 3, 1873.

At last we have news from South Wales of a definite nature, and seemingly indicative of an approaching termination of the dispute which has so long paralized one of the most important iron making districts of this country. At the Cwmavon Works the iron workers have agreed to resume work on these conditions: that they work at the reduction of ten per cent. until March 15th, then be paid at the old rate for so long a time as shall be thought proper by Mr. Martin, the manager, trusting to his honor for an advance as soon as the state of the market would permit one to be given: Further, the colliers and iron workers at Rantyels and Blaina have resumed work (to the extent of fully one-third of the usual complement of men, the remainder not daring to defy the threats held over them by the trade unionists) on very similar terms and in defiance of the manifold terrors of the union laws. These are to have the old rate of wages by the end of March, and appear to have been actuated by that motive which is more powerful than any other—downright starvation. It is also rumored that the men at Plymouth Works are moving quietly in order to get back to work on the most favorable terms that may be presented. On the other hand, Sir Rowland Stephenson (who has acted the part of mediator) in addressing a large meeting of iron workers and colliers at Merthyr Tydvil on Thursday night, stated that he found the masters immoveable in their resolution. They positively insisted upon the men going in for one month at the reduced rates. Sir Rowland earnestly urged those present to go to work to-day (Monday) on the employers terms, but his speech produced little or no effect. Next day the delegates representing the whole of the colliers of the Merthyr district, published an ultimatum in the form of a letter, setting forth the terms on which they would be willing to resume work. They argue that the men have gone as far as they can reasonably be expected to go, and that therefore, as a final offer, they will resume work at the three great establishments of the district, on condition that an advance of 5 per cent. be given on the 1st of April. They say fifteen per cent. is due to them, seeing that miners in all other districts are on the point of receiving an advance of twenty per cent.—but they will be content with the smaller sum in order to arrive at an amicable settlement. In the event of this offer being refused—and I may say that there is no possibility of its being accepted—the men will be transferred to the Northern Districts of England, where good wages await the willing workmen. So far, so good. This line of argument seems to me to be mere bombast. Do the Welsh miners suppose the promised Northern employment can be so very readily obtained, and that too without any opposition from the men already at work there, whose wages would necessarily be lowered by the importation of so large an additional amount of labor. The generic term "North" is rather vague, but would appear to indicate Yorkshire, Durham, and Scotland. These are just now El Dorados to the miners, yet I much question whether there is sufficient fellow feeling, even amongst unionists, to enable each man to have 1/ per diem taken off his wages for the benefit of men of whom he knows nothing at all. In spite of all yet said or done in this matter, I still hold to my original opinion, namely, that the struggle must eventuate in a virtual triumph for the employers. In the hopes of some sort of termination to the strike about 1000 men had been retained about Dowlais in one or other capacity, but these are all now set adrift, and the furnaces have been blown out, the only works doing anything are Briton Ferry and Landore—mostly in rails. The Treforest Tin-plate Works are yet doing a thriving business unaffected by the miserable stagnation all around. Tredegar Iron Works pass into the possession of a new company in April. The new firm will have as its chief men Messrs. Lothian Bell and Edward Williams, of Middlesborough, Mr. Menelaus, of Dowlais, and Mr. G. T. Clarke. The North Wales miners are agitating for an advance of 10 per cent., which will probably be conceded. The West Lancashire colliery owners will pay an additional 10 per cent. from March 12th, in the hope that the men will for the future work full time. The West Riding of Yorkshire coal owners at present object to accede to the demand of their miners for an extra 20 per cent., and should a conference, which has been arranged, prove unfavorable, a strike of some 13,000 men is not unlikely. A strike exists on a small scale in the Birmingham wire trade. The South Yorkshire miners demand 20 per cent. (not 15 as stated in my last letter) which will, in all probability, be conceded. At Barnsley, a strike of linen weavers, which has already lasted two months, "drags its slow length along." The Stockton-on-Tees carpenters and joiners ask for their wages to be made 32/ per week; and other wages agitations prevail elsewhere.

As to fuel—I shudderingly bethink me of a legendary ditty of my school days, wherein the praises of Old King Cole, were vauntingly set forth in eulogistic rhymes, "Oh! a merry old soul was he!" He was—so is his phonetic namesake. This later one is so irrepressibly jubilant—as represented by his agents—that I am afraid the whole country will presently fall into convulsions over his fantastic jumps, his grim revelry, his exquisite fooling. And to some I am afraid these convulsions will be anything but those occasioned by excessive mirth. I am afraid that I speak a melancholy truth when I record that hundreds of poor creatures are crawling to their graves in this bitter wintry weather, solely from the lack of wherewithal to make and sustain a fire. Even in this town, which you will remember, perhaps, is underrun in all directions by seams of coal (at a considerable depth), common rubbish, by courtesy styled coal, is over £1 per ton, and best coal is no less than 27/ to 30/ per statute ton! Why? you probably inquire. I simply reply, because we are a free trading people in all respects, and even if coal is the sole cause of England's present commercial pre-eminence, we are not such fools as to prohibit its export in order to preserve our superiority in manufacture, or for such foolish sentiment as to keep a lot of starving old people alive. By no means; we must be consistent at any cost. If poverty has to fight so hard against the impost here in the coal districts, it needs no great stretch of imagination to picture the straits to which it is reduced in London and in localities far distant from collieries. The metropolitan merchants have certainly reduced their prices a few shillings, but it is estimated that they are still realizing about 13/ per ton clear profit. *Apropos* of fuel, I may mention that I was present on Thursday evening at some experiments made with a new gas, which has been invented by a Mr. William Wright, plumber, etc., Sheffield. Several gentlemen deeply interested in the discovery of some means of dispensing with coal were also present. The lighting power of this gas is, I consider, superior to coal gas, especially when burned through a circular perforated argand burner. It is whiter and purer than a coal gas flame, and can be sent to any elevation in the same way as ordinary gas. Its chief recommendation, however, to my thinking, lies in the enormous *heating* power it possesses. With a minute jet of gas subjected to a blow pipe

melted copper wire of about No. 12 gauge in a second or two, and a larger flame with a proportionate air blast gave an incredible heat—in fact it was computed by the inventor and a steel manufacturer, who witnessed the experiment, that two or three such flames would heat a tubular boiler (and keep up steam all day) at a cost of some seven or eight shillings, whereas in the present state of things the coal required for that purpose costs £3 odd. I may state that coal is not required in the manufacture of this gas, neither is coke, and, further, its *total* cost, under any circumstances, will not exceed 7d. per 1000 feet. The apparatus is so compact that the inventor, who is a shrewd, but rough practical man, took it under his arm the other evening, and from it illuminated an omnibus a journey which took one hour and a half to perform. Its constituent parts are as yet necessarily secret, seeing that it is only now being patented, but I may state that it is an ingenious carbonization of atmospheric air by a chemical process, and that its cheapness of production is owing to this fact. The inventor assures me he requires no *coal* for its manufacture, in which case, if the future trials be satisfactory, the invention is likely to prove of the greatest possible value, not only in trade, but to people generally.

It is stated that an association is projected under the title of the Mississippi Valley Society, and with a merely nominal capital, having for its main objects the removal of all obstructions to the direct interchange of produce between Europe and the Great Western and Southern States of North America. It also proposes to facilitate the introduction of foreign capital into these States for the purpose of developing their resources and increasing their commerce. The association is said to consist of the leading business men of the Mississippi Valley, and such traders, capitalists, and others in England, Germany, &c., as are interested in the vast area drained by the Father of Waters. Various commercial details are given of the intentions of the association, and it is understood that offices have been opened in St. Louis and London. Two special aversions of the association are the excessive charges on shipping at New Orleans, and the difficulties attendant upon the carriage of goods in bond into the interior of the United States. You will, doubtless, have some information on this subject. Some time ago I mentioned that the Sheffield Chamber of Commerce had memorialized the treasury commissioners, praying that the act of parliament might be strictly enforced which prohibits the import of any goods of foriegn manufacture bearing any name, brand or mark, which states or implies that such goods were manufactured at any place within the United Kingdom. It only remains for me to state that this is now being strictly carried out. Since my last communication the iron trade proper has stiffened to a most astonishing extent. In Staffordshire and at Wolverhampton, prices have gone up very considerably. Sheets are now in immense demand, and at Birmingham are quoted fully £20. Marked bars are £14. 10/ to £14. 12/6. B. B. bars are £15, and both hoops and rods, 20/ per ton dearer. Strips firm at £14. 10/ to £15; rivet iron same; nail rods, £14 to £15; slit rods, £15. 10/; charcoal slit horse, £22 to £24; horse shoe, £14. 10/ to £15; rails, £12. 10/ to £13. 10/; plates, £18 to £19; hoops, 15 to 19, W. G., £15 to £16. 10/; galvanized sheets, to 20 G (for working up) best, £24. 10/; best best, £27 to £28; B. B. B., £30 to £32, according to quality. Angles are proportionately dearer. Cut nails have gone up 20/, and Wednesbury tubes 10 per cent. At Birmingham the tube makers are busy on German, Russian, and South American orders. Metal rollers are well employed, and general hardware is in much request. Russian orders are to hand for implements, tools, and similar goods, as also from North Europe. The Birmingham metal market has revived during the week, and the same is the case in London. Chili advices advising charters for the last fourteen days of January are 700 tons in bars and ingots; 700 in ores and regulus, and 300 for the United States. Chili bars (A brand) are now £84; good ordinary, £85. 15/; Burra, £91, and Wallaroo, £91. 10/, cash. Tin is steady, Straits being worth £143; Billiton, £140; Banca, £143. 10/ and English, £146. Spelter is likely to be dearer, Silesian now realizing £26; Rheinish, £25. 10/ to £26., in London and outports. Lead remains firm at late rates. At Sheffield the general steel trade remains very busy, and I hear it whispered that prices are being put up some 9 or 10 per cent. All the principal houses are full handed, and some are putting down extra melting holes and rolling mills. Rails are here, as, indeed, throughout the whole iron trade, the backbone of business, bringing with them, as they do, a host of other minor orders for chains, fishplates, bolts, crossings and the like. Swedish irons are again dearer, prices being £19. 5/ to £20 f. o. b. Gothenburg, for steel-iron bars. The supply is small, so that file manufacturers and others who have a fondness for these brands will of necessity have to recoup themselves for the increased cost of the raw materials. A heavy order for rifle barrels is being worked out here for a continental government, through a Birmingham house. This order will take years to get through. The foundries and heavy iron works are well employed, as also are the saw, file, and edge tool trades. Yorkshire pig is now worth £6. 5/ to £6. 10/ at the forge, and is in scanty supply. Low Moor and Bowling brands of finished iron are going up stiffly, and all other kinds of merchant iron are fully £1 dearer. In the Cleveland district every branch of trade is busy, with the following current prices: Common bars, £13. 10/ (with 10/ extra for 7-16, 20/ for ⅜, and 40/ for ½); plates, £14 to £16; T, angle and bulb iron, £14 to £15; rails, £13 to £14; fish bolts, £20 to £25; spikes, £18 to £20; rivets, £19 to £32, and washers, £36 to £38. Shipbuilders are excessively busy. Pig iron is a trifle dearer, but not as yet materially so. The West Yorkshire and Lancashire machinists and engineering works are remarkably busy on every mentionable kind of machinery. In West Cumberland, Barrow-in-Furness, and neighboring places, the hematite ores are being greatly developed. Prices now range from £1 to £1. 4/ per ton for good ores. The Barrow iron shipbuilding trade is also undergoing a steady extension. The Glasgow market has fluctuated a good deal, but in the main has gone up, and now stands at figures hitherto unknown—144 6! Taking into consideration the fact that stocks in Connal's stores are only 87,000 tons, which represent all the warrants afloat, it would appear probable that there will at present be no decline. A growing demand for pig for American and South Germany is also just setting in. Makers' prices are: Gartsherrie No. 1, £8. 10/; No. 3, £7. 5/; Coltness, same; Summerlee No. 1, £8; No. 3, £7. 4/; Langloan No. 1, £8. 10/; No. 3, £7. 5 6; Calder, £8. 5/; No. 4, £7. 5/; Shotts (Bessemer) No. 1. £8. 10/; No. 3, £8. 5/; Shotts (ordinary) No. 1, £8. 5/; No. 3, £7. 5/; Carnbroe No. 1, £7. 15/; No. 3, £7. 5/; Wishaw No. 1, £7. 6/, and No. 3, £7. 4/; No. 4, £6. 10/; Monkland and Chapel Hall No. 1, £7. 7 6 to £7. 10/; No. 3, £7. 5/; Clyde No. 1, £7. 7 6; No. 3, £7. 5 6; Glengarnock No. 1, £7. 15/; No. 3, £7. 5/; Eglinton No. 1, £7. 5; No. 3, £7. 2 6; No. 4, £7. 4/; Dalmellington No. 1, £7. 5/; No. 3, £7. 2 6; Kinneil No. 1, £7. 10/; No. 3, £7; No. 4, £6. 10; Carron, nil; Almond No. 1, £7. 7 6, and No. 3, £7. These quotations, although as correct as possible, are not just now to be implicitly relied on. The malleable iron trade remains very quiet, but the shipbuilders' yards on the Clyde are exceedingly busy.

PYROMETERS
for BLAST FURNACES.

E. BROWN'S STANDARD PORTABLE,
E. Brown's Improved
Gauntlet

Edw. BROWN,
311 Walnut St., Philadelphia.

ALSO FOR SALE
PYROMETERS

For Baker's Ovens, Boiler Flues, Galvanizing Baths, Oil Stills, Vulcanizers, Superheated Steam.
E. Brown's Portable Blast Gauge for the plug hole, Steam Gauges, Blast Gauges, Mercury Gauges, Recording Steam Gauges, Engine Counters, Indicators for ascertaining the Horse Power.

Over 200 Gauntlets and 60 Portable Pyrometers are now in use at Blast Furnaces.
Circulars on application.

IMPROVED
UNIVERSAL WRINGER

Sold by Jobbers of Hardware and Woodenware everywhere.

Metropolitan Washing Machine Co.,
32 Cortlandt Street, New York.

COBB & DREW,
Plymouth, Mass.

Manufacturers of Copper, Brass, and Iron Rivets; Common and Swedes Iron, Leathered, Carpet, Lace and Gimp Tacks; Finishing, Hungarian, Trunk, Clout and Cigar Box Nails, &c. Rivets made to Order.

NEW YORK AGENCY,
GEO. C. GRUNDY,
Successor to **Disosway & Grundy,**
No. 12 Platt St., NEW YORK
Agent for the Philadelphia Star Carriage and Tire Bolts.

SAMUEL LORING'S
PLYMOUTH TACK AND RIVET WORK
PLYMOUTH, MASS., manufacturer of
TACKS, BRADS, NAILS AND RIVETS.

Swedes and Common Iron Tacks; Leathered, Carpet, Brush, Lace and Gimp Tacks; Finishing, Hungarian, 2d, 2d and 3d Fine, Trunk, Clout, and Cigar Box Nails; Black and Tinned Trunk Nails; Zinc, Iron, Copper and Steel Shoe Nails; Brads and Patent Brads; Glaziers' Points, &c., &c., &c. **COPPER, BRASS AND IRON RIVETS,** of all kinds. Coopers' Rivets from 1d to 6d, in casks of 100 lbs. each. Hose, Belt and Shoe Rivets and Burrs. Oval and Countersunk Heads of extra lengths, made to order. SHIP AND BOILER RIVETS OF ALL SIZES AND LENGTHS.

Established in 1812.
HOBART'S TACKS.
Manufactured by
Dunbar, Hobart & Whidden,
Office and Salesroom,
35 Chambers Street, N. Y.
Factory, SOUTH ABINGTON, MASS.

Manufacturers of

American, Swedes and Copper Tacks, Tinned, Leathered and Large Head Tacks, Finishing Nails, Black and Tinned Trunk Nails, Miners', Gimp, Lace and Brush Tacks, Hungarian, Chair, Cigar Box and Barrel Nails, Glaziers' Points, Iron, Steel, Copper, Zinc and Brass Shoe Nails, **HEEL and TOE PLATES, STEEL SHANKS, and FANCY HEAD NAILS, SILVER or JAPANNED LINING and SADDLE NAILS.**

A full assortment always on hand at salesrooms, for immediate delivery if required.

Odd and irregular sizes made to order or cut from sample at short notice. Send for Price List.

FISHKILL LANDING MACHINE CO.,

[Established 1853.]

FISHKILL-ON-THE-HUDSON, N. Y.

MANUFACTURERS OF

STEAM ENGINES,

And MACHINERY of every Description.

New York Office, 63 Bleecker Street.

JAS. L. TELLER, Secy. MILO SAGE, Prest.

MINOT & CO.,

OLIVER,
CORNER STURGIS STREET
BOSTON,

MANUFACTURERS OF

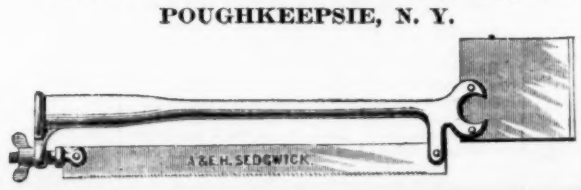
HAMMERS, SLEDGES, BLACKSMITHS'
AND STONE MASONS' TOOLS.

NEW ENGLAND AGENTS FOR

Western File Co. Cleveland Rolling Mill Co. Sweet's Mfg. Co.'s Bars and Springs.
Washoe Tool Mfg. Co. North Carolina Handle Co. Baldwin, Banes & Co.'s Steel.

General Agents, Lowell Wrench Co.

A. & E. H. SEDGWICK,
MANUFACTURERS OF
Cheese, Butter and Flour Tryers,
MECHANICS TOOLS,
GARDEN IMPLEMENTS, &c., &c.
POUGHKEEPSIE, N. Y.



Send for Illustrated Catalogue and Price List.

AMERICAN TACK Co.

MANUFACTURERS OF
Copper, Swedes, and Iron Tacks.
BRUSH, LACE AND GIMP TACKS,
Leathered, Tinned, and Iron Carpet Tacks; Finishing, Black, and Tinned Trunk Nails; Hungarian and Cigar Box Nails;
COPPER and IRON BOAT NAILS;
ZINC, COPPER, STEEL, and IRON SHOE NAILS 2d and 3d FINE NAILS;
Bright and Tinned Roofing Nails,
BRADS, PATENT BRADS, &c.
Factory, Fairhaven, Mass.
Salesroom, 117 Chambers Street, NEW YORK
N. B.—Any variation from the regular size or shape of the above named goods cut from sample to order.

Charles E. Little,
Successor to CHAS. S. LITTLE, 59 FULTON ST., N. Y.
COOPERS' TOOLS, TRUSS HOOPS,
General Hardware, &c.,
At Wholesale & Retail.
Particular attention given to the various Tool Departments. Send for catalogue.

MAYER'S BOILER COMPOUND for the Removal and Prevention of Scale and Sediment from Steam Boilers.

It is entirely free from acids; for efficiency it is the cheapest invented. ***Price, 25 cents a pound.*** Parties trying this compound and finding it other than represented are freed from any cost. All I ask is a fair trial, and insure satisfaction. I will send to any party as many pounds as they need for trial, and ask payment only after they are satisfied. 1-3 of a pound for each horse power for first trial; after, 1-8 of a pound every two weeks. Send for Circulars.

I. MAYER, Manufacturer, 99 Mercer St., N. Y.

A. FIELD & SONS,
Manufacturers of
COPPER & IRON TACKS, TINNED TACKS,
SUPERIOR SWEDES IRON TACKS,

For Upholsterers' use, Saddlers' supply, Card Clothing, &c., &c. **AMERICAN and SWEDES IRON SHOE NAILS,** Zinc and Steel Shoe Nails, Carpet, Brush and Gimp Tacks, Common and Patent Brads, Finishing Nails, Annealed Trunk and Clout Nails, Hob and Hungarian Nails.

COPPER AND IRON BOAT NAILS.

Fine Two Penny and Three Penny Nails, Channel, Cigar Box and Chair Nails.

Leathered Carpet Tacks, Glaziers' Points, &c., &c.
TAUNTON, MASS.

☞ Any variations from the regular size or shape of the above-named goods made from samples, to order. Orders by mail promptly filled.

TURNED
MACHINE SCREWS,
One-sixteenth to five-eighths diameter.
Heads and points to sample.
IRON, STEEL and BRASS.
Lyon & Fellows Mfg. Co.,
Cor. 1st and North 3d Streets, Williamsburgh, N. Y.

WANTED, BOOK AGENTS
FOR THE
FUNNY SIDE OF PHYSIC.
800 Pages, 250 Engravings.

A startling expose of Medical Humbugs of the past and present. It ventilates Quacks, Imposters, Traveling Doctors, Patent Medicine Venders, Noted Female Cheats, Fortune Tellers and Mediums, and gives interesting accounts of Noted Physicians and Narratives of their lives. It reveals startling secrets, and instructs all how to avoid the ills which flesh is heir to. We give exclusive territory and liberal commissions. For circulars and terms address the publishers, **J. B. BURR & HYDE, Hartford, Conn.,** or **Chicago, Ill.**

AGENTS WANTED FOR THE
GREAT INDUSTRIES OF THE UNITED STATES.

1300 Pages and 500 Engravings, printed in English and German, written by 20 eminent Authors, including John B. Gough, Hon. Leon Case, Edward Howland, Rev. E. Edwin Hall, Philip Ripley, Albert Brisbane, Horace Greeley, etc. This work is a complete history of all branches of industry, processes of manufacture, etc., in all ages. It is a complete encyclopedia of arts and manufactures, and is the most entertaining and valuable work of information on subjects of general interest ever offered to the public. We give our agents exclusive right of territory. One of our agents sold 138 copies in eight days, another sold 308 in two weeks. Our agent in Hartford sold 397 in one week. Specimens of the work sent to agents on receipt of stamp. For circulars and terms to agents address the publishers, **J. B. BURR & HYDE, Hartford, Conn.,** or **Chicago, Ill.**

AGENTS WANTED FOR THE
Uncivilized Races of Men in all Countries of the World.

Being a Comprehensive account of their Manners and Customs, and of their Physical, Social, Mental, Moral and Religious characteristics. By REV. J. G. WOOD, M. A., F. L. S.

500 Engravings, 1500 Super Royal Octavo Pages. In two Volumes, or two volumes in one.

Agents are making over $100 per week in selling this work. An early application will secure a choice of territory. For terms address the publishers, **J. B. BURR & HYDE, Hartford, Conn.,** or **Chicago, Ill.**

During the past year we have consolidated the Union and Backus Vises, retaining what we thought was best in each, and making a new Vise better than either. Hereafter all orders will be filled with this new Vise, which will be called the Millers Falls Vise.

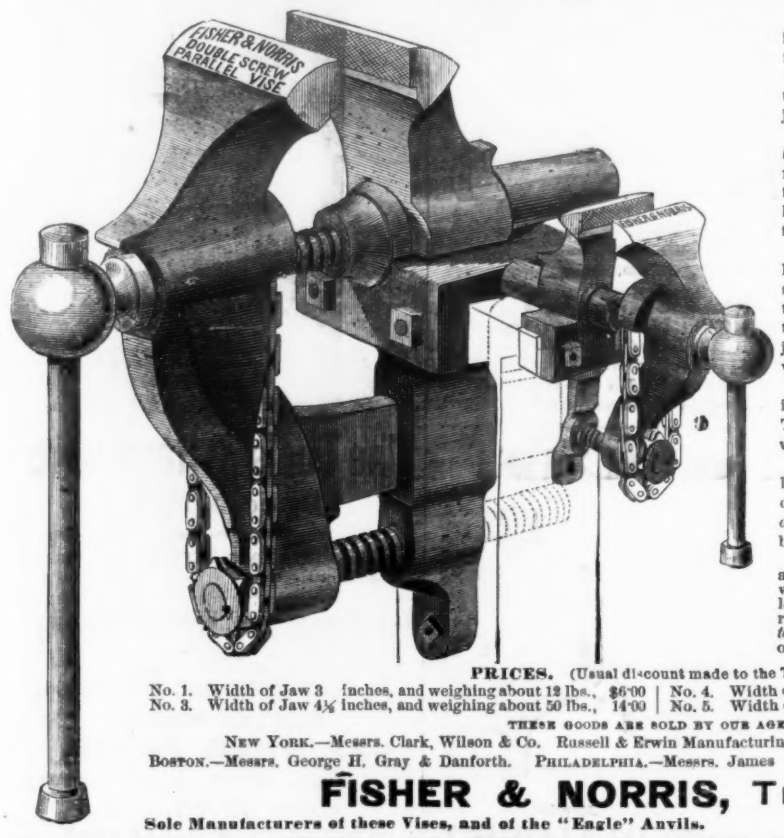
We have also commenced making a very superior Coach Makers' Vise. Our new Hand Vise is made of Solid Forged Steel, retailed at $2·00, and is meeting with universal favor. We find on careful investigation that by the pound we are selling lower than any other good Vise can be bought.

There is nothing in the market that can compete with our Six, Seven and Eight Inch Vises. All of our goods have been perfected until no fault can be found with them. They are all fully warranted, and will give entire satisfaction They can be found in most of the Hardware Stores at our lowest prices, but in places where they are not so kept we will sell to consumers at satisfactory rates.

MILLERS FALLS CO.,

78 Beekman Street, New York.

THE DOUBLE SCREW PARALLEL VISE.



More than twenty-five years' use of this Vise by Machinists, Tool Makers, Locomotive Shops, &c., has established its superiority over every other.

It is the only one which has all the strength and "grip" of the ordinary English Vise; and at the same time with the jaws *parallel* at every point of opening.

In all other "Parellel" Vises using only one screw, *less than one-third* of the power applied is effective on the work itself; beside, in those vises the large waste of power on the slide from *friction* and the *tendency to* "*jam*," of the lower end of the jaw, if screwed up very hard, renders them unfit for heavy work.

In this vise the jaws are kept *always parallel* by the lower screw moving in or out exactly with the upper, lever screw, by means of the chain connecting both: also, by their relative position *two-thirds* of the power applied at the lever screw is received by any piece held between the jaws—thus enabling the heaviest work ever required of a vise to be done with this.

The Screws are forged of the best refined iron, and work in *solid cut thread* boxes. The Jaws are faced with *best* Tool Steel, welded on, file cut, and properly tempered for wear.

The Chain is very carefully made of case hardened inside links and rivets, and, acting only to *regulate* the position of the lower screw for different points of opening, has *no direct strain* of the work upon it; it is therefore as durable as the other parts.

Only the strongest material is used in this manufacture, and from actual experiment on the six inch jaw vise, which has screws of 1⅛ inch diameter and lever 19 inches long, it has been found that applied at the lever Screw, it required to break either of the jaws, *eleven and one-half tons*, thus exhibiting a maximum strength far above *any* other vise of like size.

PRICES. (Usual discount made to the Trade.)

No. 1. Width of Jaw 3 inches, and weighing about 12 lbs., $6·00 | No. 4. Width of Jaw 5 inches, and weighing about 80 lbs., $18·00
No. 3. Width of Jaw 4½ inches, and weighing about 50 lbs., 14·00 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., 24·00

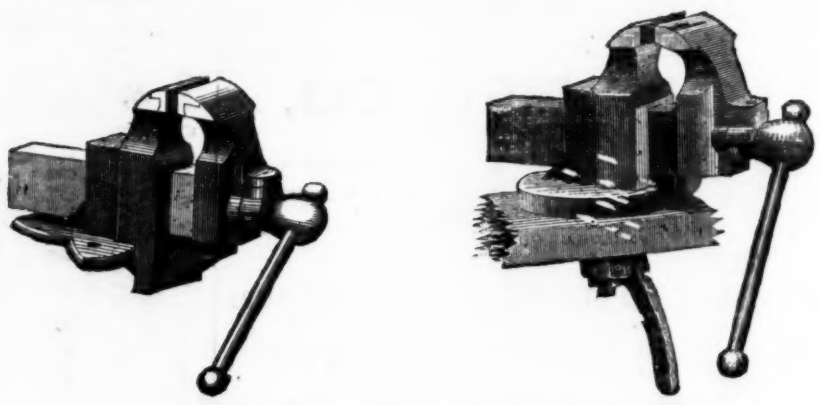
THESE GOODS ARE SOLD BY OUR AGENTS IN

NEW YORK.—Messrs. Clark, Wilson & Co. Russell & Erwin Manufacturing Company. Messrs. Durrie & Rusher.
BOSTON.—Messrs. George H. Gray & Danforth. PHILADELPHIA.—Messrs. James C. Hand & Co. BALTIMORE.—Mr. W. H. Cole.

FISHER & NORRIS, Trenton, N. J.,

Sole Manufacturers of these Vises, and of the "Eagle" Anvils.

HOWARD
PARALLEL BENCH VISE.



Manufactured at the

HOWARD IRON WORKS,

Buffalo, N. Y.

RUSSELL & ERWIN MANUFACTURING CO.,

New York and Philadelphia, Agents.

WILSON MANUFACTURING COMPANY.,

NEW LONDON, CONN.

MANUFACTURERS OF

SOLID BOX VISES.

With or without Convex and Concave Washers.

Jackscrews, Braces, Coffee Mills, Turning Lathes, Clamp Heads and Screws; Parallel Bench Vises, Sash Pullies, Ho House Pullies, Composition Cocks, Bench Screws, Vise Screws Gridirons, Drill Stocks and Bows, Box Chisels, Rivets, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Belaying Pins, Marlin Spikes, Malleable Iron Castings, and Genera Hardware.

GALVANIZING DONE TO ORDER.

WILSON MFG. COMPANY,

Warehouse 37 Chambers St., N. Y

SCHOLEFIELD, GOODMAN & SON,

(Formerly JOSHUA SCHOLEFIELD & SONS.)

GENERAL

Hardware Merchants,

BIRMINGHAM, - ENGLAND.

Agents and Sample Rooms.

New York—Edward Frith, 16 Cliff Street.
Boston—H. L. Richards, 18 Batterymarch, Street.
New Orleans—R. Rhodes, 71 Camp Street.
Montreal—J. J. Evans 14 St., John Street.

Established, 1847.

CASH PAPER WAREHOUSE

No. 44 Beekman St., N. Y. Every description of

Hardware, Manila and Wrapping

PAPERS,

Suited to the Hardware Trade and Merchants generally, or made to order.

MELVIN HARD & SON, 44 Beekman St.

The Hubbard & Curtiss Mfg. Co.,

MANUFACTURERS OF

Box Wood and Ivory Rules, Framing and Firmer Chisels, Drawing Knives, &c.

No. 82 Chambers Street, New York,

MANUFACTORY, MIDDLETOWN, CONN.

DEPOT FOR

Middletown Tool Co.,	Ætna Nut Co.,
John Charlton.,	Brendlinger & Co.,
Sanseer Manufacturing Co.,	Porter Saw Co.,
Andrews Bros.,	Lewis Armstrong & Colwell.,
Warwick Tool Co.	Campbell & Co.

UNIVERSAL SELF-TIGHTENING

WARWICK TOOL CO.'S PATENT

DRILL CHUCK.

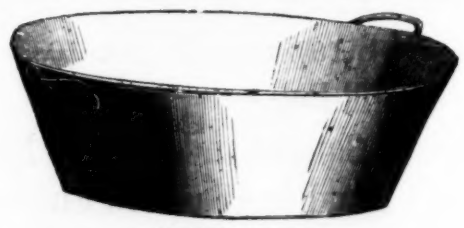
(Superior to all others, and the only practical Chuck.)

☞ All the motions in this Chuck are positive. It has no spring or complicated mechanism to break or get out of order. The Large Chuck is on the same principle precisely, and has an arrangement of the jaws for chucking small articles, for turning, boring, &c. The Small Chuck holds drills from ⅜ shank down. The Large, from ⅜ down to 5-16. **Price—Small, $6·00. Large, 8·00.**

The Taylor Manufacturing Company, New Britain Conn.
Hardware Manufacturers. Send for Catalogue.

Established 1836.

SIDNEY SHEPARD & CO.,



MANUFACTURERS OF

FRENCH STAMPED AND JAPANNED

TIN WARE.

Also, a Large Variety of Useful Articles.

DEALERS IN

Hardware and Metals,

Tinmen's Tools, Machines and Trimmings.

Please send for Illustrated Catalogue and Price List.

SIDNEY SHEPARD & CO., Buffalo, N. Y.

ALFRED FIELD & CO.,

Foreign Hardware Commission Merchants.

PRINCIPAL OFFICES,

Birmingham, England, Nos. 66 & 67 Parade.
Sheffield, England, No. 23 Westfield Terrace.
New York, U. S., Nos. 47 John and 5 Dutch St.

BRANCH OFFICES,

Philadelphia, Cincinnati, New Orleans and Montreal.

Shipping Office,

Middleton Building, No. 1 Rumford St., Liverpool.

VAN WART, SON & CO.

Hardware Commission Merchants,

BIRMINGHAM, - ENGLAND.

AGENTS

VAN WART & McCOY,

43 Chambers Street, New York.

GEORGE H. GRAY & DANFORTH,

48 India Street, Boston.

F. W. TILTON,

17 Old Levee Street, New Orleans.

At each of these places a complete assortment of samples of Hardware and Fancy Goods will be found, including all new descriptions. Sole Agents for the

John Rimmer & Son's Celebrated Harness and other Needles.

OSCAR IRVING VAN WART & Co.

FORWARDING AGENTS,

South John Street, LIVERPOOL.

Hardware.

ROY & COMPANY,

West Troy, N. Y.,

Manufacturers of

Wrought Iron Butts, Strap and T Hinges,

PLATE AND HOOK HINGES,

Cold Pressed Nuts and Washers, Felloe Clips, &c.

JOHN L. FISHER, Agent, 98 Chambers Street, New York.

SPEAR & JACKSON,

Sheffield, England,

MANUFACTURERS OF

Saws, Files, Edge Tools and Steel.

JOHN L. FISHER. Agent.

98 Chambers Street NEW YORK.

F. WIEBUSCH,

IMPORTER OF

German, Sheffield and Birmingham

HARDWARE AND CUTLERY, CHAINS AND ANVILS,

No. 84 Chambers Street, N. Y. Office at Sheffield, No. 1 Arundel Lane.

Agent for WM. WILKINSON & SONS, Sheep Shears and Hedge Shears.
do THEILE & QUACK, German Hardware and Cutlery.
do GEO. FISHER & CO., Files.
do HENRY WALDRON, English Grain and Grass Scythes.
do J. D. THEILE, Chain.
Headquarters for PETER WRIGHT'S Anvils and Vises.
do JOHN WILSON'S Butcher Knives,
do W. & S. BUTCHER'S Files, Edge Tools and Razors.
Also, Manufacturers of "MONUMENTAL" and "TYLER" Pocket Cutlery.

HERMANN BOKER & CO.,

OFFICES AND WAREHOUSES:

NEW YORK, 101 and 103 Duane and 91 and 93 Thomas Streets.
REMSCHEID and SOLINGEN (Prussia.)
SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. ARTHUR LEE.
LIEGE (Belgium), Represented by Mr. LOUIS MULLER.
Manufacturers and Importers of **Cutlery, Guns, Hardware** and **Railroad Material.**
Proprietors of **TRENTON VISE AND TOOL WORKS, Trenton, N. J.**—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, &c.
Sole Agents for **LAMSON & GOODNOW MFG. CO., Shelburne Falls, Mass.**—Table Cutlery and Butcher Knives.

We always have on hand a full assortment of

German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.

W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.
John Wilson's Butcher and Shoe Knives.
Peter Wright's Anvils. Also,
Spiegel Iron and Puddled Steel Scrap for Cast Steel Manufacture.

STANLEY WORKS,

MANUFACTURERS OF

Wrought Butts, Strap and T Hinges.
Bronzed Butts and Bolts.
Wrought Barrel, Square and Shutter Bolts.
Wrought Chest Handles, Washers, Flush Bolts, &c

79 CHAMBERS ST., NEW YORK.

Factory at New Britain, CONNECTICUT.

BEAM & MURRAY,

IMPORTERS OF

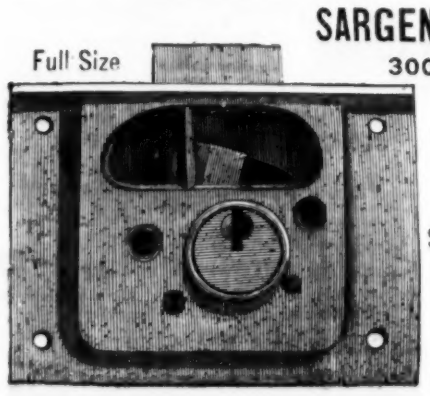
Anvils, Chains, Pocket Cutlery, Guns, Files,

BIRMINGHAM, SHEFFIELD & GERMAN HARDWARE,

Wostenholm's IXL Pocket Knives & Razors, Butcher's Files, Tools, &c.

No. 54 Cliff Street, NEW YORK.

Full Size



SARGENT, GREENLEAF & COLE,

300 Broadway, New York,

Manufacturers of

PAD LOCKS,

Drawer, Trunk, House,

STORE DOOR AND OTHER LOCKS,

NIGHT LATCHES, &c.,

with Small Flat Keys. Also

BANK and SAFE LOCK

Send for Price List.

Hardware.

BUFFALO IRON AND NAIL WORKS.

PRATT & CO.
BUFFALO, N. Y.
MANUFACTURERS OF
BAR IRON ANGLE IRON PLATE IRON SHAPE IRON FORGED IRON
Railroad Fish Plates, Bolts & Spikes.
CUT NAILS COLD CUT NUTS CUT WASHERS COACH SCREWS HORSE NAILS
Bridge, Roof, Pier & Ship Iron Work
BOILER RIVETS DRAG TEETH BOLT ENDS BOLT BLANKS CROWBARS
WHOLESALE & RETAIL DEALERS IN
HARDWARE.
STORES & OFFICES TERRACE SQUARE BUFFALO, N.Y.

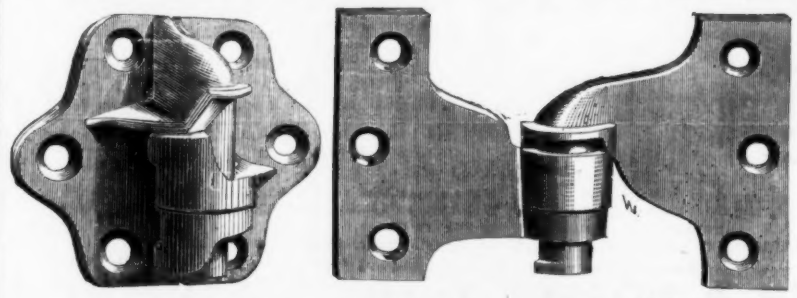
GEORGE B. WALBRIDGE,

55 CHAMBERS STREET. New York Warehouse for

WOODS CUTLERY COMPANY,

PRATT & CO., *Horse Shoe Nails, Nuts, Washers, Crow Bars, Tuyere Irons.*
NATIONAL HORSE NAIL CO., *Finished, Polished and Pointed Horse Nails.*
WOOLWORTH HANDLE WORKS, *Axe, Pick and Sledge Handles, &c.*
SHELTON CO., *Tacks, Bed Screws, Carriage, Tire & Stove Bolts, &c.*
D. H. GOODELL, *Lightning & Turn-Table Apple Parers, & Cherry Stoners.*

CLARK & CO.



Surface. *Patented Nov. 3, 1868.* *Mortise.*

THE STRONGEST BLIND HINGES IN MARKET.

Upper and Lower Hinges are alike, locking the top and bottom of the Blinds.

On long Blinds three or more may be used without mismatching sets, and all will fasten. They cannot be broken or closed by the wind.

☞ We would call the attention of the trade to our **Improved Revisible Self-Closing Gate Hinges.** Also our **Improved Axle Pulleys, both Iron and Boxwood Wheel, Sash Locks, Sash Bolts, &c.**

CLARK & CO., Buffalo, N. Y.

Send for Illustrated Catalogue and Price List

YALE LOCK MFG. CO.

Office and Works at STAMFORD, Conn.

Salesroom No. 1 Barclay New York.

FINE FLAT-KEYED LOCKS for all Purposes

RIM and MORTISE STORE DOOR LOCKS,

Heavy Front Door and Vestibule Locks.

Rim and Mortise Night Latches,

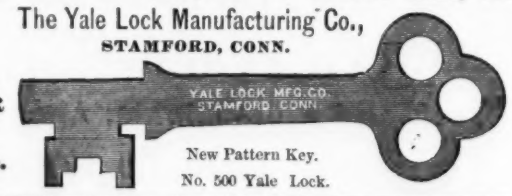
CLOSET, CHEST, DRAWER, DESK and PADLOCKS,

Post Office Lock Boxes and Prison Locks,

Leeds' Gate Fixtures, Field's Shutter Bars, etc., etc.

The Yale Lock Manufacturing Co.,
STAMFORD, CONN.

The Best TUMBLER LOCK Ever Made.



New Pattern Key.
No. 500 Yale Lock.

Samples sent on Application

NORWICH LOCK MFG. CO.

Salesrooms:

Norwich, Conn. Adams & Chute. 4 Liberty Sqr., Boston.

88 Chambers St., N. Y. John C. Brenner, Son & Co., 21 North 5th St., Phila.

BUCK BROTHERS, Millbury, Mass.

LARGEST STOCK AND BEST ASSORTMENT IN THE UNITED STATES OF

SHANK AND SOCKET FIRMER CHISELS.

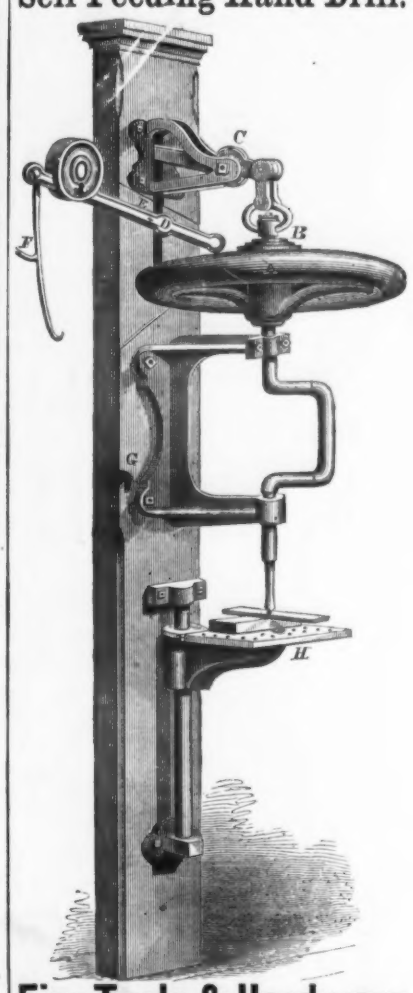
Also, BEST QUALITY SOCKET FRAMING CHISELS.

Hardware.

BIDDLE MANU'FG CO.

PATENT

Self Feeding Hand Drill.



Fine Tools & Hardware Specialties.

Warerooms,
78 Chambers Street, N. Y.
Send for catalogue.

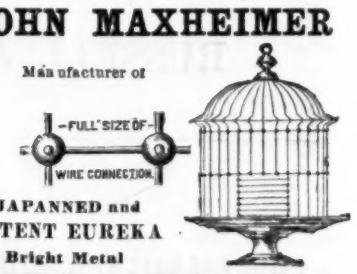
The Peck Stow & Wilcox Company

MAKE

Tinners' Tools and Machines,
COFFEE MILLS,
CARRIAGE BOLTS,
Steelyards, Dividers, Compasses,
Coes Wrenches,
WROUGHT and MALLEABLE.
STEEL and IRON SQUARES.
And a large variety of
General Hardware.
Send for a Catalogue. *97 Chambers St., N. Y.*

JOHN MAXHEIMER

Manufacturer of



JAPANNED and PATENT EUREKA Bright Metal

BIRD CAGES,

Nos. 247 & 249 Pearl Street, NEW YORK.

Putnam's Horse Nails,
Vulcan Horse Nails,
Globe Horse Nails,
Ausable Horse Nails,
Burden's Horse Shoes,
Perkins' and R. I. Horse Shoes,

FOR SALE BY

John I. Brower & Son

288 Greenwich St., N. Y

New York Wholesale Prices, March 26, 1873.

HARDWARE.

Anvils.

Solid Cast Steel ... ℘ ℔ 14c
Wright's ... ℘ ℔ gold 12½c; over 250 lbs. 13c. gold
Armitage's Mouse Hole ... gold 12c
Wilkinson's ... ℘ ℔ gold 11½c
Eagle Anvil Co. ℘ ℔ 11 cts ... dis 15 @ 15&5 %

Apple Parers.

Turn Table, Lightning, Reading, Conqueror ... $8·50 per dozen.
Union ... per doz. $8 00 @ 8 50
Bay State, Paring Coring & Slicing ... 13 50 @ 15 00
Skeleton " " " ... 8 00
Climax Slicer ... 9 00
Bay State Peach Parer ... 11 00 @ 11 50
Lightning Peach Parer ... 11 00 @ 11 50
Peach Stoner & Halver ... 6 00

Augers and Bits.

Snell Mfg. Co ... dis 15 %
Russell Jennings ... dis 10 %
Douglass Mfg. Co., Extra ... dis 25 %
" " No. 1 ... dis 25&5 %
" " Hollow Augers ... dis 25 %
Cushman's Expanding Hollow Auger ... dis 20&10 %
Ives' ... dis 25 %
" Hollow Augers ... dis 30 %
" Expansive " ... dis 30 %
" Expansive Bits ... dis 25 %
Andrews' Bitts ... dis 20 %
Cook's Patent Augers ... dis 40 %
" " Bits ... dis 25&10 %
Shepardson's Double Cut Bits ... dis 20 %
Griswold's Patent ... dis 20 %
Cast Steel Cut Augers ... new list dis 25&10 %
Cast Steel Auger Bits ... dis 25&10 %
Long Augers ... new list dis 30 %
Bonney's Patent Hollow ... $48 per doz.—dis 25 %
Stearns' Patent Hollow ... $48 per doz.—dis 30 %
Morse's Bit Stock Drills ... dis 20%

Axes.

Blood's ... $12 50 @ 14 00
Hunt's ... ℘ doz 15 00 @ 17 50 net @ dis 5 %
Collins' ... ℘ doz 12 00 @ 16 00 net @ dis 5 %
Hurd's ... ℘ doz 12 50 @ 13 50
Simmons' ... ℘ doz 12 00 @ 13 00
Morris' ... ℘ doz 12 50 @ 13 50
Red Jacket ... ℘ doz 12 00 @ 12 50
Mann's ... ℘ doz 13 00 @ 14 50
Powell Tool Co., "Peerless" ... ℘ doz 13 00 @ 14 50

Balances.

Chatillon's, Frary's, Morton's ... new list, dis 15 %

Bands.

Plated ... add 10; dis 5 %
Iron ... dis 5 %
Brass ... (Plated list) ... dis 5 %
Oroide ... add 15; dis 5 %

Bells.

Hand, Light Brass ... dis 55&10 %
White Metal ... dis 45&10 %
Globe ... dis 20 %
Abbe's ... dis 10 & 10 %
Taylor's Patent Door ... net
Western Gong ... net
Brook's Crank ... net list.
" Pull ... dis 15 %
Hart Mfg. Co., Crank and Pull ... net list
Cow—Common Wrought ... new list dis 33⅓ %
Western ... new list dis 33⅓ %
Kentucky "Star" ... new list dis 10&10 %
Dodge's Genuine Kentucky ... new list dis 25 %
Yaw's Genuine ... dis 20 %

Bellows.

Blacksmiths' ... dis 10 %
Moulders' ... dis 10 %

Blind Fasteners.

Van Sand's ... ℘ gross $14 00
Washburn's Patent ... ℘ gross 14 00
Merriman's ... add 35 @ 40%

Blind Staples.

Boardman's Patent, ⅜ in. and larger ... ℘ ℔ 37½c
" ⅜ in. ... " 42 c

Bolts.

Cast Iron Barrel, Shutter, &c ... old list dis 30&10 %
Wrought Iron Barrel ... net
" " Square ... dis 10&10 %
Carriage and Tire, Common ... dis 60&10 %
Carriage and Tire, Norway Iron ... dis 40 %
Star, Philadelphia ... dis 40 %
Eagle, Philadelphia ... dis 40 %
Philadelphia Pattern, P. S. & W ... dis 50&5 %
Carriage and Tire, R. B. & W ... dis 50&5 %
Plow, R. B. & W ...
Stove R. B. & W ... dis 10 %
Union Nut Co ...
Machine ... dis 10 @ 15 %

Boring Machines.

Kellogg's ... dis 10 @ 15 %
Snell Mfg. Co., Rice's Patent ... dis 15 %
Snell Mfg. Co., Regular ... dis 15 %
Douglas Mfg. Co ... dis 20 %
Hovey's Angle ... $6 00 @ 6 25
Hovey's Upright ... 4 25 @ 4 50
Morticing Machines, each ... $18 00

Braces.

Barber's Patent ... dis 30&10 %
Wilson Mfg. Co ... net @ add 5 %
Spofford's Patent ... dis 37½ %
Noble's Patent ... dis 33⅓ %
Bartholomew's ... dis 15&10 %
Bartholomew's Patent ... dis 25 %
Q. S. Backus & Co ... dis 30&10 %

Bung Hole Borers.

Common and Ring ... dis 20 %
Enterprise Mfg. Co ... dis 20 %
Ives' Tap Borers ... dis 20 %

Butchers' Cleavers.

Bradley's ... dis 15 %
Beatty's ... new list dis 10 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co ... dis 45&10 %

0	1	2	3	4	5	6
$25·25	$29·75	$30·25	$38·75	$43·55	$48·50	$54·00

Butts.

Wrought Brass ... new list dis 25 %
Cast Fast Joint Narrow ... dis 15 %
" " " Broad ... dis 30 %
Cast Loose Joint ... dis 40 %
" " " Mayer ... dis 30 %
" " " Parliament ... dis 30 %
Loose Pin Butts, Plain ... dis 25 %
" " Japanned ... dis 25 %
" " National ... dis 40 %
Wrought Fast Joint, Narrow ... dis 10 %
Wrought Broad ... dis 15 %
" Loose Joint ... dis 15 %
Wrought Table and Back Flaps ... net
Palmer Blind Butts ... dis 30&10 %
Nicholson Blind Butts ... dis 30 %
Parker's Blind Butts ... dis 25&10 %
Clark's Blind Butts ... dis 30 %
Seymour's ... dis 30 %
Shepard's ... dis 30 %
Garretson's ... dis 40 %
Standard ... dis 30 %
Union Mfg. Co.'s Drilled Fast Narrow ... new list dis 25 %
" " " " " Broad ... dis 25 %
" " " " Loose ... dis 35 %
Whitney & Wait's Bronze Metal ... dis 20 %

Caps—Percussion per 1000.

G. D ... 40c
Ely's E. B ... 1-4s, 67½c; 1-10s, 75c, gold
" Double Waterp'f, 1-4s, $1·57½; 1-10s, $1·65c. gold
Colt's ... 1-4s, 82½c; 1-10s, 90c, gold

Cartridges.

Metallic ... dis 45 %

Cards.

Horse and Curry ... dis 20&10 %
Cotton ... dis 25 %
Wool ... dis 20 %

Casters.

Iron and Wood Wheel Plate ... new list dis 20&10 %
Brass Wheel Plate ... new list dis 20&10 %
Porcelain Wheel Plate ... new list dis 20&10 %

Chain.—By the Cask.

English Coil ... net gold

℘ ℔.	13½	10½	9½	9c	8½	8½
	3-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2 ... ℘ pair, gold, 65c
Trace, 7 10-2 ... ℘ pair, gold, 70c
Galvanized Pump Chain ... ℘ ℔ 14c
German Halter Chain ... new list, gold, dis 10 %
German Coil ... new list, gold, dis 10 %

Ja k Chain, Iron ... dis 35 @ 40 %
" " Brass ... dis 20 @ 25 %

Chalk.

White ... ℘ gross, 50c
Red ... ℘ gross, 75c
Blue ... ℘ gross, 85c
Crayons ... ℘ gross, 14c

Cherry Stoners.

"Family" ... ℘ doz $9 00

Chisels.

Socket Firmers ... dis 60&5 @ 60& 10 %
Socket Framing ... dis 60&10 %
Socket Corner ... dis 60&10 %
Tanged Firmers ... dis 40 @ 40&10 %
Butcher's ... $5 50 to £ gold—new list
Spear & Jackson's ... $5 50 to £ gold—new list

Clips, Axle.

Norway or Best ... dis 20 @ 30 %
Superior ... dis 40&5 %
"Star," Superior, Philadelphia ... dis 45&5 %

Coal Shovels.

Iron Handled ... ℘ doz, $ 85 @ 1 25
Wooden Handled ... ℘ doz, 1 00 @ 2 00

Coal Hods.

Smith, Burns & Co ... dis 25 %

No.	14	15	16	17	18	
Japanned,	$9·00	9·75	10·50	12·00	13·50	per doz
Galvanized,	13·00	14·50	15·50	17·50	19·50	"

Cocks.

Brass Racking ... dis 10&10 %
Lock & Globe ... dis 10 %

Coffee Mills.

Common Board and Box ... dis 10&5
Better Grades ... dis 10 %
Increase Wilson's ... new list ... dis 10 %
French Steel ... dis 10 @ 20 %
"Champion" ... dis 20 %
Swift's ... dis 20 %

Compasses and Dividers.

Bemis ... dis 15&15 @ 20&5&15 %
Excelsior ... dis 30 %
Peck, Stow & Wilcox ... dis 20 %

Coopers' Tools.

Bradley's ... dis 15 @ 20 %
Chas. E. Little ... dis 15 @ 20 %

Corn Knives and Cutters.

Bradley's ... list net

Crucibles.

Gautier & Co ... ℘ No. 5½c

Curry Combs.

Hotchkiss' and Kellogg's, Iron and Brass ... dis 10 %
Fitch's ... dis 20 %
Ruggles' ... dis 15 @ 20 %
Rubber ... ℘ doz, $9 00—dis 10 %

Curtain Pins.

Silvered Glass ... dis 40&10 %

Cutlery.

American Table ...
American Pocket ... dis 15 %

Door Springs.

Torrey's Patent ... $7 50 ℘ doz—dis 20&10 %
J. Palmer ... ℘ doz $5 50

Drawing Knives.

... dis 60 @ 60&10 %
Bradley's ... dis 25 %

Drills.

Ingersoll's Ratchet (Wrought Iron) ... dis 25 %
No. 1, 12-in., $6 50 each; No. 2, 16-in., $8 75 each; No. 3, 20-in., $11 00 each.

Egg Beaters.

Monroe's ... ℘ doz net $8 25 @ 8 50
Ashley's ... ℘ doz net 2 25 @ 3 00
Earle's Patent ... ℘ doz net 5 50 @ 6 00
Pratt's Aerating ... dis 10 %
Dover ... ℘ doz net $6 00

Emery.

Genuine Chester—Regular Nos ... ℘ ℔ 8c } dis 5 %
" Flour and FF ... ℘ ℔ 5c }
Washington Mills—Regular Nos ... ℘ ℔ 8c
" Flour ... ℘ ℔ 5c

Enameled and Tinned Ware.

Kettles ... dis 10 %
Sauce Pans, Glue Pots, &c ... dis 5 %

Faucets.

Cork Lined, Wood ... dis 50 @ 55&10 %
Fenn's ... dis 50 %
" Cork Stops ... dis 40 %
Star ... dis 55&10 %
Frary's Patent Petroleum ... dis 10 & 10 %
Taylor's Pattern Petroleum ... dis 20&10 %
Wood and Metallic" ... dis 40 %

Files.

American Best ... $5 00 to £ net
Nicholson—Mill ... 5 00 to £ net
" Others ... 5 00 to £ net
" Tapers (single cut) ... 5 00 to £ net
J. & Riley Carr's ... 5 50 to £ gold
Stubs' ... 8 00 @ 8 25 to £ gold
Butcher's ... 5 50 to £ gold
Spear & Jackson's ... 5 50 to £ gold
Hargreaves, Smith & Co.'s ... 4 75 to £ gold
Jowitt's ... 5 25 to £ gold
"Western" ... 5 00 to £ net
W. K. & C. Peace's "Imperial" ... 5 25 to £ gold
R. Ibbotson ... 5 00 to £ gold
Beam & Murray, "Cyclops" ... 4 85 to £ gold
Fisher's ... 4 75 to £ gold
Goodlad's ... 4 00 to £ gold
Moss & Gamble ... 5 25 @ 5 50 to gold

Fluting Machines.

Acme ... $7 00 each net
Cole ... 5 75 each net
Manvill, No. 2 ... 7 00 each net
Knox, with 4-inch Rolls ... 5 00 each net
" " 6 " " ... 6 00 each net
O. K ... 6 50 each net
Excelsior, No. 1 ... 4 75 each net
" " 2 ... 6 50 each net
Diamond ... 7 50 each net
Climax, 7-inch Rolls ... 8 00 each net
" 4½" " ... 6 50 each net
Empire ... 4 00 each net
Eureka, No. 1, 7-inch Roll ... 8 00 each net
" No. 2, 5-inch Roll ... 6 00 each net
K. F. M., 4½ inch Roll ... 5 50 each net
" 6-inch Roll ... 6 00 each net
Carpenter's Self-Heating ... 13 50 each net
Fairy, Self Heater ... 10 00 each net
National, 5-inch Rolls ... 5 00 each net
Myer's Fashion Fluter, 4½ inch Rolls ... 3 00 each net

Fry Pans.

Tinned— ... dis 20 %

℘ doz	$3·00	3·25	3·62	4·00	4·50	5·00	5·50	6·00	7·50
No.	0	1	2	3	4	5	6	7	8

Peck, Stow & Wilcox ... dis 20 %
Smith, Burns & Co., "Excelsior" Polished ... dis 20 %

	$3·70	4·00	4·70	5·30	6·00	7·00	8·00	9·00	per doz.
No.	1	2	3	4	5	6	7	8.	

Hammers.

Maydole's ... new list net
Cheney's ... new list net
Verree ... dis 5 %
Yerks & Plumb ... new advanced list dis 5 @ 10 %
Emmet Hammer Co ... dis 10 %

Handles.

Hammer and Hatchet ... dis 10 %
Quakertown, Axe, Pick and Sledge ... dis 10 %
" Hammer and Hatchet ... net

Harness Snaps.

Judd's ... dis 30 %
Fitch's ... dis 30 %

Hatchets.

Isaiah Blood ... dis 10 %

	Nos.		1	2	3
Shingling,	1 2 3	℘ doz	$7 50	8 00	8 50
Claw,	1 2 3	℘ doz	8 50	9 00	9 50
Lathing,	1 2 3	℘ doz	7 50	8 00	8 50

Hunt's ... net

	Nos.		1	2	3
Shingling,	1 2 3	℘ doz	$7 25	8 00	8 75
Claw,	1 2 3	℘ doz	7 75	8 50	9 25
Lathing,	1 2 3	℘ doz	7 50	8 25	9 00

Hurd's ... dis 20 %

	Nos.		1	2	3
Shingling,	1 2 3	℘ doz	$8 00	8 50	9 00
Claw,	1 2 3	℘ doz	9 00	9 50	10 00
Lathing,	1 2 3	℘ doz	8 00	8 50	9 00

Newark Edge Tool Co's ... dis 25 %

	Nos.		1	2	3
Shingling,	1 2 3	℘ doz	$6 50	7 00	7 50
Claw,	1 2 3	℘ doz	7 25	7 75	8 25
Lathing,	1 2 3	℘ doz	6·50	7 00	7 50

Yerks & Plumb ... dis 10 %

	Nos.		1	2	3
Shingling,	1 2 3	℘ doz	7 00	7 50	8 00
Claw,	1 2 3	℘ doz	7 50	8 00	8 50
Lathing,	1 2 3	℘ doz	7 00	7 50	8 00

Simmon's ... dis 10 @ 15 %

	Nos.					
Shingling,	0 1 2 3	℘ doz	7 50	8 00	8 50	9 00
Claw,	1 2 3	℘ doz		9 00	9 50	10 00
Lathing,	1 2 3	℘ doz		8 00	8 50	9 00
Broad,	1 2 3	℘ doz		9 00	10 00	12 00
"	4 5 6	℘ doz		14 00	16 00	18 00
"	7 8	℘ doz		20 00	22 00	

J. P. Verree & Co ... dis 5 %

	Nos.				
Shingling,	1, 2, 3	℘ doz	$7 00	7 50	8 00
Claw,	1, 2, 3	℘ doz	7 50	8 00	8 50
Lathing,	1, 2, 3	℘ doz	7 00	7 50	8 00

Hinges.

Wrought Strap and T ... dis 15%
Providence Plate ... 6 & 8 in. list 11c; over 8 in. " 9½c ... dis 5 %
Screw Hook and Strap ... 8, 10, 12 in. 8½c; 14 to 36 in. 7½c ... net

Hoes

Solid Shank, C. S ... ℘ doz $8 00—dis 20 @ 25 %
Socket, C. S ... ℘ doz 9 00—dis 20 @ 25
Riveted Eye ... ℘ doz 5 00—dis 20 @ 25 %
Planters'—Winsted ... add 10 %
Scovill ... add 33⅓ %
Scovill Pattern (Winsted) ... add 20 %

Hooks.

Belt ... dis 50 %
Bench ... ℘ doz net $5 00 @ 8 50
Wardrobe, Japanned ... new list dis 10&10 %
Hat and Coat " ... new list dis 10&10 %
Wrought Staples and Hooks and Staples ... dis 60 %
Wrought Hasps and Staples and Hasps, Hooks and Wrought Staples ... dis 60 %
Screw Hooks and Eyes, revised list ... dis 60&10 %

Horse Nails.

Putnam's.

No.	5	6	7	8	9	10
	32c	28c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.

Ausable.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs. 5 % discount.

Brundage.

No.	5	6	7	8	9	10
	29	26c	24c	23c	22c	21c

In lots of 500 lbs., dis 5 %

American Pressed.

No.	5	6	7	8	9	10
	22c	20c	20c	20c	20c	20c

Perkins Finished, (ready to drive).

No.	5	6	7	8	9	10
	29	26	24	23	22	21c

Buffalo Forged.

No.	6	7	8	9	10
	28c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.

National (Pointed and Polished), Extra Finish.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs., dis 5 %.

Vulcan.

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs., 7½ % discount.

New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
WB.	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis. 5 %.

Star Brand ... ℘ ℔ 16c
Morgan ... 16 c

Horse Shoes.

Burden ... ℘ keg. $6 25
R. I. Horse Shoe Co., Perkins' Pattern ... ℘ keg. 6 25
" " R. I. Pattern ... ℘ keg 6 75
Mule Shoes ... ℘ keg. 7 25

Kettles.

Enameled ... dis 10 %
Brass ... ℘ ℔ 55c
In lots of 500 lbs ... ℘ ℔ net 50c

Knives.

Butcher and Shoe, "Ames" ... dis 15 %
Butcher and Shoe, "Wood's" ... dis 5 % cash
Hay and Straw, "Wadsworth's" ... dis 15 %

Knobs.

Base—Common ... net
" Plush Tip ... dis 10 %
Elastic End ... reduced list ... dis 10&10 %

Lanterns.

Brady's Patent ... dis 10 %
Ætna ... dis 10 %
Yankee ... dis 10 %
De Beque ... dis 10 %

Locks and Latches.

Cabinet—Eagle ... dis 25 %
Cabinet—Gaylord ... dis 25 %
Trunk ... dis 10 %
Continental ... dis 15 %
Shepardsons ... dis 20 %

Meat Cutters.

Dixon's (P. S. & W) ... dis 5 %

No.	1	2	3	4
℘ doz	$14 00	$17 00	$19 00	$30 00

Hales' ... dis 10 %

No.	11	12	13
℘ doz	$27 00	$33 00	$42 00

Perry's Champion (P. S. & W) ... dis 5 %

No.	200	300	400
℘ doz	$22 00	$27 00	$40 00

Woodruff's (P. S. & W) ... dis 5 %

No.	100	150
℘ doz	$15 00	$18 00

American ... dis 25 @ 25&5 %

No.	1	2	2½	3	4	5
Each	$6 00	$9 00	$14 00	$15 00	$30 00	$75 00

Molasses Gates.

Stebbins' Pattern ... dis 60&10 %
Tinned ends ... dis 40&10 %
Weed's Patent Self-Boring ... dis 15 %
" without Auger Bit ... dis 40 @ 50 %
Patent Self-Measuring ... per doz $42 00—dis 20 %

Mouse Traps.

Wood Choker ... 40&10 %

Nails.

10d Cut (Standard) ... ℘ keg $5 25

Nuts and Washers.

Cold Cut Nuts ... 3c off list
Hot " " ... 3c off list
Washers, (as to quality) ... less 3c @ 6c off list

Oil Stones.

Washita No. 1 ... ℘ ℔ 22c @ 25c
Washita Slips ... ℘ ℔ 44c @ 50c
Hindostan ... ℘ ℔ 7c
Hindostan Slips ... ℘ ℔ 10c net

Oilers.

Olmsted's ... dis 25&10 %
Broughton's ... dis 25&5 %
Common Zinc, Brass and Copper ... dis 20 %

Picks.

Washoe R. R. Nos.	1	3	3	4	5
per doz.	$14·00	15·00	16·00	17·00	18·00
Washoe Coal, "	$8·50 9·00	10·00	11·00	13·00	15·00

Picture Nails and Knobs.

Richards' Patent ... dis 40 @ 40&10 %

Planes.

Auburn Bench and Fancy ... dis 15 %
Bailey's Patent Adjustable ... dis 15&10 %
Howland's Bench and Fancy ... dis 15 %
Chapin's " " ... dis 15 %
Chapin's, 2d quality ... dis 15&5 %
Sandusky Tool Co ... dis 15 %
"Ogontz" ... dis 15&5 %
Plane Irons ... list net
" " Butcher's ... $5 50 to £ gold—new list
" "Spear & Jackson's ... $5 50 to £ gold—new list
" " Sandusky Tool Co ... list net

Pumps.

Douglas Cistern, etc ... new list dis 25 %
" S. & F ... new list dis 20 %

Rakes.

Cast Steel ... dis 25

$8 00	$9 00	$10 00	$11 00	
8	10	12	14	teeth.

Razor Straps.

Genuine Emerson (B. F. Badger) ... dis 33⅓ %
Hunt's ... dis 25&10 %
Chapman ... dis 10 @ 15 %

Rivets.

Iron and Tinned ... dis 25 %
Copper Rivets and Burrs ...

Rods.

Stair ... new list dis 25 %
American Patent ... dis 25 %

Rope.

Manufacturers' List.
Manila ... ⅜ inch and larger ℘ ℔ 18c
" ... ⅜ inch ℘ ℔ 18½c
" ... ¼ & 5-16 inch ℘ ℔ 19c
" Lath Yarn ... ℘ ℔ 19c
" Hay Rope ... ℘ ℔ 18½c
Jute ... ℘ ℔ 12c
Sisal ... ½ inch and larger, ℘ ℔ 15½c
" ... ⅜ inch ℘ ℔ 16c
" ... ¼ & 5-16 inch ℘ ℔ 16½c
" Hay Rope ... ℘ ℔ 16c

Rules.

Boxwood and Ivory ... dis 60&10 %

Sad Irons.

... ℘ ℔ 5½ @ 6c

Sand Paper—dis 7½ @ 1 %

Beader & Adamson's Flint) 00 to 1½ ... $4 50 ℘ ream
" " " 2, 2½ & 3 ... 5 00 "
Assorted ... 4 50 "
Star ... ℘ ream $3 50
Emery ... ℘ ream $7 00 @ 12 00

Sash Locks.

Clark's ... dis 25 @ 30 %
Ferguson's ... dis 20 @ 25 %
Champion ... per gross $13 00 @ $15 00
Norwich ... dis 15 %

Sash Weights.

Solid Eyes ... ℘ ℔ 3½c

Sausage Fillers.

Perry's (P. S. & W) ... dis 5 %

No.	1	0
℘ doz	$15 00	$21 00

Saw Rods.

... list net

Saws.

Spear & Jackson's ... $4 50 to £ gold
John Spear ... $2 60 to £ gold
Am. Saw Co ... new list
Perforated Cross Cuts, all kinds ... 68c per foot
Inserted Tooth ... dis 10 %
All else ... dis 12½ %
Disston's Cross Cut, Circular and Mill ... dis 12½ %
Hand, Panel, Back, &c ... dis ⅜ %
Butcher Bow Saws, Butcher Saw Blades, Hack Saw Blades ... dis 12½ %
H. W. Peace's Circulars ... dis 10 %
Other kinds ... dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular ... new list dis 10
Lightning ... new list ... dis 20&12½

Scales.

Fairbanks' ... new list ... dis 15 @ 20 %
Howe's ... dis 15&5 %
Shattuck's Counter and Union ... dis 15 %
National Platform ... dis 25 %
Eureka ... dis 25 %
Scale Beams ... dis 20 %
No. 1 300 to 1200 lbs ... 90c. ℘ cwt
No. 2 " ... 75c ℘ cwt

Screws.

American and National Screw Cos.
Iron ... revised list dis 50 %
Round Head Iron ... dis 40 %
Brass ... dis 40 %
Round Head Silver Capped ... new list dis 20 %
Patent Gimlet Point Coach and Hand Rail ... dis 10 %
Bed ... list ne

Scythes.

Blood's German Steel, Grass ... ℘ doz $ 9 00
" Cast " " ... ℘ doz 10 00
" Silver " " ... ℘ doz 11 00
" German " Grain ... ℘ doz 13 00
" Cast " ... ℘ doz 14 00
" Red Rover ... 12 00
" Young America ... 9 50
" Silver Clipper ... 12 63
Scythe Snaths ... dis 20 %

Shears.

Cast Steel ... dis 60 @ 60&5 %
Seymour's ... dis 50 %
Conn. Cutlery Co., new brand ... dis 60 %

Shovels and Spades.

Ames ... list July 1, '70, list net @ dis 2½ %
Rowland ... new list Feb. 8, '73, dis 20 %
Old Colony ... dis 2½ %

Shovels and Tongs.

Iron Head ... list net
Brass Head ... dis 5 %
Polished Steel ... new list dis 15 %

Slates.

Square Frames, R'd Corn'd, by case ... dis 60&10 %
Less than a case ... dis 50 @ 55 %
Oval Frames, by case ... dis 40 @ 40&10 %
Less than a case ... dis 30

Spoons.

Iron ... new advanced list ... dis 10 %
By the case ... dis 20 %
Britannia ... dis 25&10 %
Plated A 1 ... dis 25&5 %
German Silver ... net
Tinned (P. S. & W.)—
Teas ... $1.50 ℘ gross, net
Tables ... 2·75 "

Stocks and Dies.

... dis 15 %

Stove Polish.

Joseph Dixon's ... ℘ gross $6 00 @ 6 25
Gold Medal ... ℘ gross $5·50

Squares.

Steel ... dis 50 %; full cases, dis 50& 0
Iron ... dis 50 %; full cases, dis 50&10
Nickel Plated ... add $2 50 @ $4 00 ℘ doz net
Try Squares and T Bevels ... dis 45&10 %
Star Try Squares and Bevels ... dis 20 %

Tacks.

Full Weight American Iron ... dis 40&7½ %
Half Weight American Iron ... dis 70&7½ %
Carpet ... dis 7½ %
Brads American ... dis 50&7½ %

Finishing Nails	⅛	⅝	¾	⅞	1 in. and over
℘ ℔	25	20	17	14	12½c dis 7½ %
Trunk and Clout	⅛	⅝	¾	⅞	1 in. and over
℘ ℔	25	20	17	14	12½c dis 7½ %

Copper Tacks ... ℘ ℔ 56c—dis 7½ %
Iron Shoe Nails, ℘ ℔ 4-8 and longer, 10c; 3½-8, 10½c ... dis 7½
Double Pointed ... new list dis 33⅓

Tapes, Measuring

American Flask and Cap Co ... dis 10&10 %
Eddy's ... dis 10&10 %

Toe Calks.

... per ℔ 1½c

Tobacco Cutters.

Champion ... dis 20
Peck, Stow & Wilcox ... dis 10 %

Traps.

Newhouse ... dis 17½ %
Hotchkiss ... dis 20 %
Peck, Stow & Wilcox ... dis 30 %
Blake's Patent ... dis 15 @ 20 %

Vises.

Trenton Vises, Solid Box.
30 to 110 lbs ... 17c
111 to 160 lbs ... 18c
160 and over ... 21½c
Peter Wright's ... ℘ ℔ 15½c. gold
Wilson's Solid Box ... dis 10 %
39 to 160 lbs ... 18c
160 and upward ... 21c
Backus & Union, Parallel ... dis 25 %
Buffalo, Parallel ... new list dis 15 %
Fisher & Norris' Double Screw Par ... dis 15 @ 15&5 %

Wire.

Bright and Annealed ... Nos. 0 @ 18 dis 20 @ 25 %
" " ... Nos. 19 @ 26 dis 30 @ 35 %
" " ... Nos. 27 @ 36 dis 35 @ 40 %
Coppered ... Nos. 0 @ 18 dis 15 @ 20 %
Galvanized ... dis 35 @ 40 %
Tinned ... dis 15 @ 20 %
Cast Steel ... net @ 5 %
Tinned Broom Wire ... dis 20 @ 25 %
Galvanized Telegraph, Nos. 8 & 9 ... ℘ ℔ 10 @ 11c
" " " 10 & 11 ... ℘ ℔ 11 @ 12c
" " " 12 ... ℘ ℔ 11½ @ 12½c
Annealed Fence, Nos. 8 & 9 ... dis 20 @ 25 %
" Grape, " 10 to 14 ... dis 20 @ 25 %
Fence Staples ... ℘ ℔ 10c

Wrenches.

Baxter's Adjustable "S" ... dis 20 %
Baxter's Diagonal ... dis 20 %
Collins & Co.'s ... new dis list 30 %
Coes' Genuine ... dis 30&10 %
Coes' Pattern (Wrought) ... dis 45 %
" " (Malleable) ... dis 50 %
Lindsay's Patent ... dis 25 %
Taft's Pattern ... dis 60&15 %
Davis' Patent Duplex ... dis 40 %

METALS.

IRON.—Duty: Bars, 1 to 1½ cents per lb., Sheet Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron.

AMERICAN.

Foundry No. 1 ... ℘ ton $50 00 @
Foundry No. 2 ... " 46 00 @ 48 00
Gray Forge ... " 40 00 @ 42 00
White and Mottled ... "

SCOTCH.

Gartsherrie ... "
Coltness ... "
Glengarnock ... " 55 00 @ 56 00
Eglinton ... " 54 00 @ 55 00

Bar Iron.

Am. Refined, at mill ... ℘ ton, 100 00 @

Rails.

Welsh, gold ... ℘ ton, 70 00 @
American, at works, currency ... " 80 00 @ 85 00
Old Rails, D. H ... currency " 56 00 @ 58 00

Scrap Iron.

Wrought Scrap, from yard ... " 57 00 @

Bar Iron from Store.

Common Iron.
¼ to 2 in. round and square ... ℘ ton $100 00
¼ x 9-16 in. " ... " 105 00
½ in. " " " ... " 107 50
3½ to 3 in. " " ... " 105 00
o 6 in. wide x ⅜ and 1 in. thick ... " 100 50
¼ to 6 in. wide x ¼ & 5-16 in. thick ... " 105 00
and 1½ in. x ¼ and 5-16 ... " 107 00

Swedish on.
1½ x ¾ and ⅛ ... ℘ ton 160 00
1½ x ⅜ to ⅝, and ⅝ square ... " 155 00
1¾ to 5 x ⅜ to ¾ and ⅞ to 2-in. square ... " 150 00
6 to 12 x ⅜ and ⅝ ... " 160 00

Refined Iron.
⅝ to 2 in. round and square ... " 107 50
1 to 6 in. wide x ⅜ to 1 thick ... " 107 50
1¼ to 6 in. wide x ¼ and 5-16 thick ... " 112 50
1 and 1½ x ¼ and 5-16 ... " 115 00

Large Rounds.
2⅛ to 2⅞, round and square ... " 115 00
3, 3¼ and 3½ in ... " 120 00
3¾ and 4 in ... " 127 50

Rods—⅝ and 11-16, round and square ... " 112 50
½ and 9-16, " " ... " 117 50
7-16, " " ... " 120 00
⅜, " " ... " 125 00
5 16, " " ... " 130 00
¼ " " ... " 135 00
3-16, " " ... " 155 00

Band Iron.
1 to 6 in. x 3-16 to No. 12 ... " 125 00

Horse Shoe Iron.
⅝ and ⅞ x ⅜, to ⅝ ... } 127 50
1 x ⅜, to ⅝ ... }

Ovals, Half Ovals and Half Rounds.
⅝ to 1½ ... ℘ ton 132 50
⅝ and 11-16 ... " 137 50
½ and 9-16 ... " 142 50
7-16 ... "
⅜ ... "

Nail Rods
UB ... ℘ ℔ 9½c

Norway Shapes
½ to 2 in. x ¼ to ⅜ ... " 9¼c
½ to ⅜ square ... " 9¼c

Norway Bar.
⅜ to 2 in. square ...

Spring Steel.
1 to 4 in. wide ... " 9½c

Tire Steel
⅞ to 1½ x ¼ & 5-16 ... " 9¾c
⅞ & 1 x 3-16 ... " 9¾c
⅞ & 1 x ⅛ ... " 10¾c

Toe Calk Steel
½ to ⅞ x ⅜ to ⅝ ... " 8¾c

Plow Steel.
6 to 16 wide ... " 9¾c

Sleigh Shoe Steel
⅝ to 1½ x ⅜ to ⅝ ... Stock ... " 7½c

Hoops, ⅝ x No. 22 ... ℘ ton 180 00
" ¾ x No. 20 ... " 150 00
" ⅞ x No. 19 ... " 145 00
" 1 and 1½ x No. 18 ... " 140 00
" 1½ to 2 and 1 x 1½ x No. 13 & 14 ... " 135 00

Scroll Iron—⅜ x 12 ... " 160 00
" " 10 ... " 155 00
" " 3-16 ... " 140 00
" " ¼ ... " 145 00
" ⅝ x 14 ... " 160 00
" " 12 ... " 155 00
" " 10 ... " 150 00
" " 3-16 ... " 145 00
" " ¼ ... " 140 00
" ¾ x 14 ... " 150 00
" " 12 ... " 145 00
" " 10 ... " 140 00
" " 3-16 ... " 135 00
" " ¼ ... " 132 50
" ⅞ x 14 ... " 145 00
" " 12 ... " 140 00
" " 10 ... " 135 00
" " 3-16 ... " 132 50
" " ¼ ... " 130 00

Sheet Iron.

		English.	American
os. 10 to 20	℘ ℔	6¾c	8c
21 to 24	"	7¼c	8¼c
25 to 26	"	7½c	8½c
27	"	7¾c	8¾c
28	"	8c	9c
30	"	8½ @ 9c	
Galvanized, 10 to 20	℘ ℔		12c
21 to 24	"		13c
25 to 26	"		14c
27	"		15c
Patent Polished	"		15 c
Russia ... Nos. 8 @ 11,	"		20c @ 22 c
" ... Nos. 12 @ 16,	"		20c @ 22 c
Belgian	"		13 c

One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

4½	5	5½	6	7 inch.
$3 75	4 25	5 25	5 25	6 50 per doz.

RUSSIA IRON.

4½		5½	6	7 inch.
$7 00	13 00	00	13 00	14 00 per doz.

Brass.

ROLLED AND IN SHEETS.
(Brown & Sharp's Gauge.*)

For the purchase of 100 pounds and over at one me:

HIGH BRASS.

All Nos. to No. 28, and widths 14 in. and under ... 40c
All Nos. to No. 28, inclusive and widths over 14 to 20 in. inclusive ... 43c
Over 20 in. to 30 in., inclusive ... 46c
Half-cent ℘ ℔ advance on each No. above No. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass at ... 59c
Sheets 24x48 in., and all sheets cut to particular sizes and lengths ... 46c
Printers' Rules ... 50
Sheets wider than 30 in. and under 40 in ... 50c
" 40 " and over ... 52c
Circular sheets, in diam. from 4 in. to 14 inclusive ... 50c
Circular sheets, in diam. over 14 in. to 20 inclusive ... 53c
Circular sheets, in diam. over 20 in. to 30 inclusive ... 56c
Circular sheets, in diam. over 30 in. to 40 inclusive ... 59c
Circular sheets in diam. over 40 in ... 62c

LOW BRASS.

4 cents ℘ ℔ more than High Brass.
Gilding Metals, 7c. ℘ ℔ more than High Brass.
Platers' or Gold Metal { In Bars ... 52c; Sawed ... 55c

FOR SLITTING: Metal in Width,
in. to ⅜ in., to No. 30, inclusive, 1c. ℘ ℔ advance.
in. to 1 in., thinner than No. 30, 2c. ℘ ℔ advance.
n. to ⅜ thinner than No. 30, 3c. ℘ ℔ advance.
⅜ in. and less to No. 30, 2c. ℘ ℔ advance.
⅜ in. and less thinner than No. 30, 5c. ℘ ℔ advance.
10 % discount.

SCRAP.

High Brass Scrap, 21 cents, net.
Low " 23 " "
Gilding, 25 cents, net.
Turnings, Filings and Chips, half the price of Scrap, net.

BRASS AND COPPER WIRE.
(Stub's Wire Gauge.)

	High Brass.	Low Brass.	Gild'g and Cop'r.
Nos. 0 to 20	43	47	53
Nos. 21, 22, 23	44	48	54
Nos. 24 and 25	45	49	55

Brass Wire straightened and cut, 4 cents advance.
10 % discount

FINE WIRE—NET PRICES.

	High Brass.	Low Brass.	Gil and d'g Cop'r.
No. 26	0·45	0·49	0·55
No. 27	0·48	0·52	0·58
No. 28	0·50	0·54	0·60
No. 29	0·52	0·56	0·62
No. 30	0·54	0·58	0·66
No. 31	0·56	0·60	0·70
No. 32	0·60	0·64	0·75
No. 33	0·64	0·68	0·85
No. 34	0·68	0·72	0·95
No. 35	0·73	0·77	1·07
No. 36	0·82	0·86	1·19
No. 37	1·02	1·02	1·32
No. 38	1·22	1·32	1·62

Ten cents per pound extra for Spooling.

TUBING
(Brown & Sharp's Gauge.)

Plain to No. 20, inclusive ... ℘ ℔ $0·56
Nos. 21, 22, 23, 2c. advance on List for each No.
Nos. 24, 25, 26, 4c. " " "
Above No. 26 special rates.
Plain Tube, 1-4 inch ... 72
" " 3-16 " ... 1 57
" " 1-8 " ... 1 82
All Mandrel-Drawn Tubes 5c. advance on List.
Fancy Tubing 4c. advance on List above Plain.
English, Scotch, and Extra Patterns Fancy Tubing to No. 20 ... 65
Tubing sawed or cut 2 to 4 ft. long, 2c. advance on List.
Add to two cents a half-cent for each additional cutting under two feet.
10% discount.

BRASS DOOR RAIL, Polished.—32 cents per lb.—10 % discount.

BELT AND HOSE COPPER RIVETS AND BURS.

Price per ℔	57	58	60	62	64	66	68	72	76c
Nos.	7	8	9	10	11	12	13	14	15

Braziers Rivets, 51 cents per pound.

Copper and Brass Rivets and Burs made to particular sizes and pattern.

The discount on the foregoing list will be 10 per cent.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent. 12 inch. to No. 26	0·65	0·80
6 " " "	0·75	0·90
10 " " "	0·90	1·10
15 " " "	1·00	1·25
18 " " "	1·10	1·40
20 " " "	1·20	

German Silver Sheets over 12 inches wide and weighing more than 10 lbs. $2·60 ℔ lb

Advance two cents for each additional inch in width above 12 inches, and two cents per pound on each No. thinner than Nos. 26 to 36, inclusive.

All German Silver thinner than No. 36 is Platers' at 50 cents per pound additional.

German Silver Scrap, one-third less than net price of 12 inch Market Metal; German Silver Turnings, Filings and Chips, half the price of Scrap.

*Brown & Sharp's Gauge is about two numbers finer than Stubs' Wire Guage.

COPPER—DUTY: Pig, Bar and Ingot, 5; old copper, 4 cents ℔ lb; Manufactured (including all articles of which copper is a component of chief value), 45 ℅ ad valorem. A llsubject to a reduction of 10 per cent.

American Ingot ℔ lb 35½ @ 35c
English " " 30 @ 31c

SHEATHING, BRAZIERS' COPPER, BOLTS, &C.

Braziers Copper, ordinary sizes, over 16 oz., per square foot 45c. ℔ lb
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot 48c. "
Braziers' Copper, 12 oz. per square foot and lighter 51c. "
Circles less than 24 inch in diameter 48c. "
Circles, 24 inch diameter and over 51c. "
Segment and Pattern Sheets 48c "
Locomotive Fire Box Sheets 45c. "
Sheathing Copper, over 12 oz. per sq. ft. 43c. "
" 12 oz. ℔ sq. ft. & lighter 51c. "
Bolt Copper 45c. "

No Copper in Sheathing except 14x48 Inches, and not to exceed 34 oz. to the square foot.

TINNING.

14x48, by the case 8c. ℔ sheet.
14x48, less than case 10c. "
Boiler Sizes, 7 and 8 inch 12c. "
" " 9 inch 15c. "
Other sizes not larger than 30x60 3½c. ℔ sq. ft.
Larger than 30x60 5c. " "
Copper Bottoms, 48c ℔ lb.; 5 ℅ discount.

O'NEIL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier 49c. By the case, 48c. ℔ lb
12 oz. and lighter 52c. " 51c. "

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
14 and 16 oz. and heavier 51c. By the case, 50c. ℔ lb. (And all sizes not over 20 inches wide).

30x60.

14 and 16 oz. and heavier 53c. ℔ lb.
2 oz. 56c. "

LEAD—DUTY: Pig, $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.

Spanish @ 6½c gold
German Refined @ 6¾c gold
English @ 7¼c gold
Bar dis 10 ℅ 9¾c
Pipe dis 10 ℅ 10½c
Tin Lined Pipe dis 10 ℅ 16½c
Sheet dis 10 ℅ 10½c
Shot dis 10 ℅ Drop, 11½c; Back, 12¼c

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3½ cents per lb. and 10 ℅ ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.

Tool 17c
Spring 18½c
Homogeneous 13½c
Tire 12½ @ 13½c
Machinery (round and square) 11½ @ 12c
File 12½
Sheet 14 @ 16c
Saw Plate, mill and mulay 14 @ 16½c
" Plate, gang and X cut 13 @ 14
" circular as to size 18 @ 30c

Chrome Steel.

Tool 16 @ 18c
Machinery 11 @ 12c
File 12 @ 15c

English Steel—payable in gold, dis. 5 ℅ cash.

do Best Cast ℔ lb 19½c
do Extra Cast " 20½c
do Round Machinery, Cast. " 12½c
do Swaged, Cast " 21½c
do Best Double Shear " 19½c
do Blister, 1st quality " 15½c
do do 2d quality " 13½c
do do 3d quality " 11½c
German Steel, Best " 12½c
do Eagle " 11½c
do 3d quality " 10½c
Sheet Cast Steel, 1st quality " 19½c
do do 2d quality " 17½c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash 8¼ to 8¾c. gold
American " 8 @ 11c currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.: Electro-galvanized Plates, 2 cents per lb.; Manufacturers of, not enumerated, 35 per cent. ad val.—all subject to a reduction of 10 per cent. Bars, Banca or Block, and Pigs, free.

Banca ℔ lb 38½c. gold
Straits ℔ lb @ 34c. gold
English ℔ lb @ 32c. gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal	@ 14·50
12x12, "	@ 15·00
14x20, "	@ 15·50
I X 10x14,	@ 16·75
12x12, "	@ 17·25
14x20 "	@ 17·75
For each additional X add	2·25 @ 2·50

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$14·00	$13·00	$12·50
14x20	14·75	13·50	
12x12	14·25	13·50	

TERNE PLATE.

	Prime. Charcoal.	2d qual. Charcoal.	Coke.
I C 14x20	$13·00 @ 13 50	12·75 @ 13·25	11·25 @ 12 75
I X 14x20	15·50		

ZINC—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet, 2½ cents per pound. All subject to a reduction of 10 per cent.

Sheet cask 10 ½c
" open 11 @ 11½c

Paper Stock, Old Metals, &c

(Dealers' Selling Prices.)

Canvas linen	5¼ @ 6
Canvas, cotton, No. 1	7¼ @ 7½
" " No. 2	4
White linen rags, No. 1	7 @ 7¼
" " No. 2	5 @ 5¼
Colored	3 @ 3½
Mixed woolens	2 @ 3
Soft woolens	9 @ 10
Gunny bagging	2¾ @ 3
Jute Butts	2 @ 2¾
Kentucky bagging	3¼ @ 3¾
Book stock	4½ @ 5
Waste paper and scraps	2¾ @ 3
Rope cuttings	1¾ @ 3
Kentucky Bale rope	4 @ 4¼
Oakum junk, No. 1	5 @ 5¼
" " No. 2	4
Grass rope	4¼ @ 4¾
Tarred Shaking	1¾ @ 2

Old Metal.

Copper	27 @ 28
Yellow metal	18 @ 20
Brass	18 @ 21
Old lead, solid	6¼ @ 7
Tea lead	5¾
Wrought Iron	2¾
Sheet iron	1 @ 1¾
Cast iron	@ 1¾
Machinery iron	1¼ @ 2
Zinc	@ 5¾
Pewter, No. 1	26 @ 27
" No. 2	19 @ 19
Spelter	7

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters ℔ lb 30
" " Ordinary 6c
" Ivory Drop, fair 15c
" " best 26c
Black Paint, in oil kegs, 8c, asst'd cans, 10½c
Blue, Prussian, fair to best 50 @ 75c
" " in oil 35 @ 65c
" Chinese, dry 83c
" Ultamarine 25 @ 30c
Brown, Spanish 1¾c
" Van Dyke .8c
Carmine, French $14 00
Green, Chrome 15 @ 25c
" " in oil 18 @ 25c
" Paris good, 20c, best, 40c
" " in oil " 30c, " 45c
Mineral Paints 1¼ to 4c
Orange Mineral 14½c
Red Lead, American 9¾c
" " English 10½c
" Venetian (N. C.) dry 2½c
" " in oil asst'd cans, 11c, kegs, 8½c
" Indian, dry 10c
Rose Pink 13c
Sienna, American, Raw 4c
" Burnt 4½c
" " in oil 16 @ 20c
" Raw " 15 @ 25c
Umber, Burnt 4 @ 8c
" " in oil 16 @ 21c
" Raw 3½ @ 7½c
" " in oil 16 @ 22c
Vermillion, Chinese 1 40
" English 1 30
" Trieste 1 10
" Americas, Common 23c
White Lead, American, pure dry 11½c
" " " in oil 12 c
White, Paris, English, prime in bbls. 2½ @ 2¾c
Yellow Ochre, French 2½ @ 2¾c
" " in oil asst'd cans, 11c, kegs, 8½c
" Vermont in casks 1½c
" Chrome 17 @ 27c
" " in oil 18 @ 28c
Zinc White, American No. 1 dry scarce 10c
" " " 1, in oil 12c
" French (Paris) 11½c
" " in oil 12½c

Oils.

Linseed Raw ℔ gal. casks, 95c, bbls, 96c
" Boiled " 1 00c, " 1·01
Whale, Crude "
" Bleached Winter "
Sperm, Crude "
" Winter unbleached "
" " Bleached " 1 85
Seal, Extra Refined " 87½c
Lard, Pure Winter " 80c
" Spring " 78c
Cotton Seed, Crude " 55c
" Southern Yellow " 65c
" White " 75c
Neatsfoot, Winter " $1 35
Natural Lubricating " 45c

Sundries.

Asphaltum .8c
Benzine ℔ gal, 20c
Chalk 1½c
" Block
Dryer, Patent, Am'n asst'd cans, 11½c., kegs, 9c
" English " " 12c., " 11c
Flocks
Frostings .50c
Glue, White .33 @ 45c
" Sheet .20c
Glazier's Points, Zinc .9c
Gum, Copal .80c
" Damar .25c
" Shellac, English .50c
" " dark .46c
Litharge .16c
Pumice Stone, selected Lumps 5 @ 7c
" " powdered .4c
Putty in bladders .3½c
" in bulk .3c
Rotton Stone, soft, English .8c
Sand Paper, crystal $3 25
" " flint 60
Spirits Turpentine .59c
Whiting, Spanish .1¼c

Glass.

French Window—1st, 2d, 3d, and 4th qualities, Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$10·75	$9·75	$9·00	$8·25
11 x 14 & 12 x 13	11·50	10·25	9·75	8·75
10 x 16 to 14 x 26	12·50	11·50	10·25	9·00
18 x 22	13·25	12·00	10·75	9·50
15 x 26 to 20 x 30	15·75	14·00	12·00	10·25
22 x 30 to 24 x 30	19·75	16·75	13·50	
26 x 28 to 24 x 36	20·25	17·50	14·00	
26 x 36 to 26 x 44	22·75	20·25	15·50	
28 x 44 to 30 x 50	24·00	21·50	16·75	
30 x 52 to 30 x 54	27·25	24·00	18·75	
30 x 56 to 34 x 56	29·50	26·25	22·00	
34 x 58 to 34 x 60	31·50	29·50	25·00	
36 x 60 to 40 x 60	37·00	32·50	29·50	

DOUBLE

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$16·00	$14·50	$13·50	$12·50
11 x 14 & 12 x 13	17·25	15·50	14·75	13·25
10 x 16 to 14 x 26	18·75	17·25	15·50	13·50
18 x 22	20·00	18·00	16·25	14·25
15 x 26 to 20 x 30	24·00	21·00	18·00	15·50
22 x 30 to 24 x 30	30·00	25·25	20·25	
26 x 28 to 24 x 36	31·00	26·50	21·00	
26 x 36 to 26 x 44	34·00	30·50	23·25	
28 x 44 to 30 x 50	36·00	32·25	25·25	
30 x 52 to 30 x 54	41·00	35·00	28·25	
30 x 56 to 34 x 56	45·00	39·50	33·00	
34 x 58 to 34 x 60	48·00	45·00	37·50	
36 x 60 to 40 x 60	55·00	49·00	45·00	

Sizes above—$12 ℔ box extra for every five inches. Discount to the trade 50 per cent.

PHENIX

FIRE AND MARINE INSURANCE CO.,
Of Brooklyn, N. Y.
Principal Office, No. 173 Broadway.

Cash Capital $1,000,000·00
Net Cash Assets $1,862,000·00

Fire Brick.

B. KREISCHER & SON.,
New York Fire Brick &
STATEN ISLAND
CLAY RETORT WORKS,
Established 1845.
Office, 58 Goerck Street, cor. Delancy Street,
East River, New York.

The largest stock of Fire Brick of all shapes and sizes on hand, and made to order at short notice.

Cupola Brick, for McKenzie Patent, and others. Fire Mortar, Ground Brick, Clay and Sand. Superior Kaolin for Rolling Mills and Foundries. Stone Ware and other Fire Clay and Sand, from my own mines at New Jersey and Staten Island, by the cargo or otherwise.

BLACK LEAD
CRUCIBLES.
Manufactured by
ADAM NEWKUMET,
1537 & 1539 N. Front St., Phila., Pa.,
For Steel, Brass, Nickel, Copper, Bronze, &c.
Equal to any in the market, and all guaranteed.
☞ Keeping a full stock of all sizes on hand, and being confident of giving *entire satisfaction*, we respectfully ask consumers to give us a trial

Salamander & Albany Fire Brick Works
Rathbone St., Albany, New York.
PALMER, NEWTON & CO.,
Manufacturers of FIRE BRICK of every shape for Gas Works, Tanneries, Lime Kilns, Rolling Mills, Blast Furnaces, Glass Works, Stove, Range and Heater Linings; Fire Clays, Kaolin, Fire Sand, Fire Cement, by cargo or barrel. Orders filled on short notice.

Philadelphia Fire Brick
AND
Clay Retort Works,
AND KENSINGTON FIRE BRICK WORKS.
Office, 23d and Vine, Philadelphia.
PHILIP NEWKUMET,
Successors to JOHN NEWKUMET, Proprietor, manufactures 9-inch Fire Bricks, Tiles, and Blocks, for Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Glass Houses, &c., &c
Articles of every description made to order at short notice, and in a very superior manner.
"CLAY RETORTS FOR SUGAR HOUSES."

TRENTON
Fire-Brick and Terra-Cotta Works.
Fire-Brick, Blast Furnace Blocks
Of all shapes and sizes, Fire Clay, &c.
Stoneware, Drain and Sewer Pipe, from 2 to 18 inches Bore. Terra-Cotta Chimney Tops, Chimney Flues, Garden Vases, &c. Send for Price List and Illustrated Catalogues to
O. O. BOWMAN & CO., Trenton, N. J.
Branch Office, 47 Dey Street, N. Y.

Watson Fire Brick Manufactory,
ESTABLISHED 1836.
JOHN R. WATSON, Perth Amboy New Jersey,
Manufacturer of
FIRE BRICK,
For Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Tanneries, Boiler and Grate Setting, Glass Works, &c.
FIRE CLAYS, FIRE SAND, AND KAOLIN FOR SALE.

A. HALL & SONS, Perth Amboy, N. J.
ESTABLISHED 1846.
HALL & SONS, Buffalo, N. Y.
ESTABLISHED 1866.
FIRE BRICK
of reliable quality for all purposes, manufactured of the best New Jersey Fire Clays. Also, MINERAL KNOBS, ROCKINGHAM WARE, Fire Clay, Fire Sand, Kaolin and Ground Fire Brick.

Brick Presses.

BRICK PRESSES,
For Fire and Red Brick.
PATENT STEAM GEARING
For grinding Clay for Red or Fire Brick, and all kinds of **Brick Machines** in general.
Works, 1819 Germantown Ave., Phila.
GEO. CARNELL.

Oldest and Largest Establishment of the kind in the U. S.
F. L. & D. R. CARNELL,
1844 Germantown Avenue, Philadelphia.
Manufacturers of Pennsylvania Brick Machine, Little Giant Pipe Machine, Fire and Red Brick Presses, Clay Wheels, Tile Machines, Stampers, Grinding Pans. Brick Yards fitted out for running by steam or horse. Heavy and Light Castings. Send for circular.

BRICK PRESSES
For Fire and Red Bricks.
BRICKMAKERS' TOOLS.
Factory, 309 South 5th St., Philadelphia.
Established 1844.
S. P. MILLER.

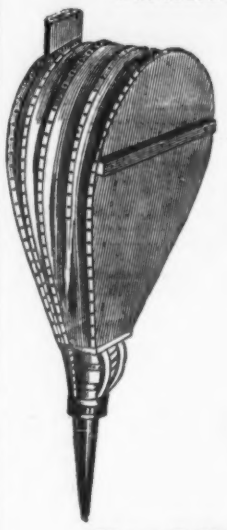
GERS 1810

GEORGE E. NEWCOMB. JAMES W. NEWOCMB. JOHN H. NEWCOMB.

NEWCOMB BRO'S SONS,

Manufacturers of

Smiths', Moulders' and Hand

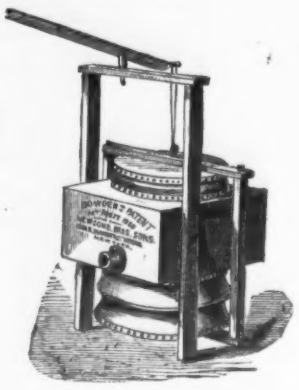


Also the Sole Manufacturers of

Bowden's Patent

TRIPLE-ACTION

Forge Bellows.



These Bellows are superior to all others now in use.

They can be used either in single or double-action, for light or heavy work, as required. They maintain a steady and continuous blast, the air being forced into the chest both at the up and down stroke. The strength of blast obtained is double that of the ordinary bellows of the same dimensions. They work easily. While the blast is double, the power required to work them is no more than that of a common bellows. Being fully rigged and geared, ready for work, and easily moved from place to place, they are very convenient on rail road, mining, and other purposes where portable bellows are required. They economize space, occupying only half the room of an ordinary bellows. These Bellows come to hand at once. A good blast is obtained at the first stroke, and no time or labor is lost, as in the old single-action bellows, in getting up a good blast. They can be made of any size and shape, to suit all requirements. They are the cheapest Bellows in the world. With all the advantages of double-action, they cost no more, power for power, than the common single-action of same quality. For further particulars send for descriptive circular and price list.

586 Water St., near Montgomery, N. Y.

STATE RIGHTS FOR SALE.

Canal Street, East Broadway and South Street Cars cross Montgomery Street.

Improved Stationary Engines.

Always on hand assortment of sizes from 10 to 200 horse power. Second-hand engines taken in exchange when desired.

Climax Turbine Water Wheels.

Assortment of sizes always on hand.

Pulleys, Shafting, Gearing and General Machinery.

Send for Circular.

WHITEHILL, SMITH & CO., Newburgh, N. Y.

THE CORRUGATED STOVE PIPE ELBOW,

Strong, Cheap.

Durable, No Soot, Better Draft.

MANUFACTURED BY

SELLEW ELBOW CO.,

48 Cliff Street, NEW YORK. 27 North Canal Street. CHICAGO.

The National Screw Co.,

MANUFACTURERS OF

Patent Dovetailed Slot Gimlet-Pointed

IRON AND BRASS SCREWS.

COMPLETE ASSORTMENT OF SIZES.

RUSSELL & ERWIN MFG. CO., Sole Agents

45 and 47 Chambers Street, New York.

P. O. Box 3288. Orders filled promptly.

D. H. WHITTEMORE'S
MEAT CUTTER
For Family Use.

Cuts raw or cooked Meat, Hash, Vegetables, &c., in one-tenth the time it takes by hand. It works extremely easy and a child can operate it. Sells at all seasons of the year. Price, $3·00; wholesale price, $27·00 per doz. Sample orders filled at the wholesale price.

"Bay State" & "Skeleton"
Apple Paring, Coring, and Slicing Machines.
"Union" Apple Parer.
BAY STATE Peach Parer. Peach Stoner and Nut Cracker.

Liberal discount on purchases of Apple Parer, &c., made before the regular time of selling. Correspondence invited.

D. H. WHITTEMORE, Worcester, Mass.

HILL'S ARCHIMEDEAN" LAWN MOWER.

THE CHAMPION OF THE WORLD.

he first and only Balanced Lawn Mower made and operated by an Adjustable Handle.

The leading Machine both in the United States and Europe, having taken the Gold Medal at the great Fair in Hamburg, Germany, and the Premiums at every test tri al in the U. S. Also the Silver Medal at the Cincinnati Exposition of 1872.

So well known is this favorite Lawn Mower that it needs no further recommendation. It has a greater reputation, and larger sale, both in the United States and Europe, than any Lawn Mower made, and the first and only one constructed upon those principles.

What we claim for it over others is ease of operating, *durability*, and beauty and evenness of its work.

We wish more particularly to call attention to the addition we have made to our list, of 2 sizes of Horse Mowers, and one beautiful little Croquet Mower for small Lawns and Cemetery Lots, which is the most complete thing of its kind made, and is easily operated by a Miss of ten years. Our list is as follows:

10 inch Croquet Mower, for Miss, $20·00. 14 inch, for Man - - - - - $25·00.
12 inch, for Boy - - - - 22·00. 28 inch, for Pony - - - - - 100·00.
32 inch, for one Horse - - - $125·00.

Send for circulars. Manufactured by the

Hills Archimedean Lawn Mower Co.,
Colts Armory, Hartford, Conn.

SEMPLE, BIRGE & CO., General Agents, West of the Mississippi, St. Louis, Mo.

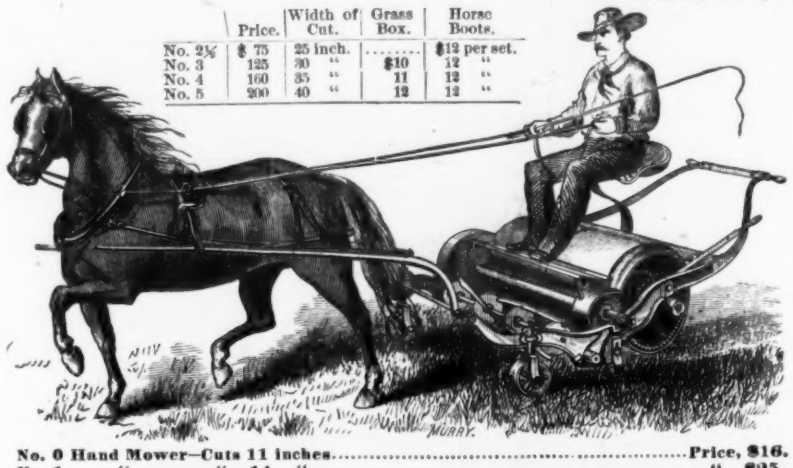
The Improved Excelsior Lawn Mowers,

FOR HAND OR HORSE POWER, MANUFACTURED BY

CHADBORN & COLDWELL MANUFACTURING CO.

P. O. Box 479, NEWBURGH, N. Y.

	Price.	Width of Cut.	Grass Box.	Horse Boots.
No. 2¼	$ 75	25 inch.	.....	$12 per set.
No. 3	125	30 "	$10	12 "
No. 4	160	35 "	11	12 "
No. 5	200	40 "	12	12 "



For Sale by all the leading Hardware, Agricultural Implement and Seed Stores, in this and foreign countries.

Ask for the Excelsior and get the Best.

No. 0 Hand Mower—Cuts 11 inches.....Price, $16.
No. 1 " — " 14 " ..... " $25.
No. 2 " — " 18 " ..... " $30.

The No. 1 for general use, and warranted. The No. 2 for large lawns—when smooth.

The Excelsior is simple and durable. The *gearing* securely incased and will not clog. Has a *full roller*, without which no machine is perfect. A *ball ratchet*—"noiseless"—needs no oiling. Adjustable *wrought iron handle*. *Hangers* secured by bolts. The front rollers to these are adjustable, to vary the hight of cut. *Open balance wiper*—with *steel knives*—the only practicable means of securing strength and ease of draught. *Patent iron handle*, with attachment on each side of the machine—avoids the serious annoyance of a single wooden handle. The **Excelsior Lawn Mower** having been before the public for four years, and subjected to the most severe tests, the manufacturers feel warranted in asserting that for SUPERIORITY in *simplicity of construction* and *durability* it has no equal. It is *important* in either *Horse* or *Hand Lawn Mowers*, that their design should combine the *greatest strength* with least amount of *metal*; we therefore use only the very *best material*, together with *good workmanship*, enabling us to produce *Lawn Mowers* light *in weight*, of *easy draught*, and at a price within the reach of all.

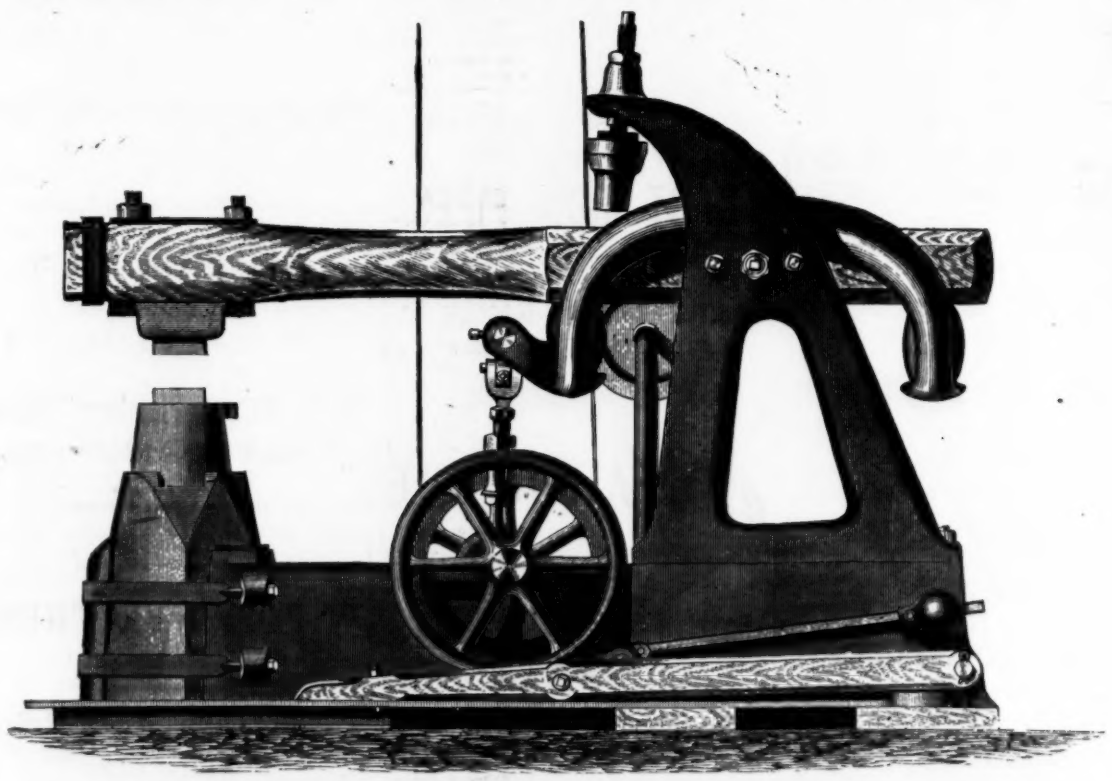
The Excelsior has received the most favorable commendation from all, and the advantages claimed for it over other machines are fully appreciated wherever it is known. To this we add numerous testimonials, but the fact that our sales have greatly increased year by year, is the most convincing proof of its adaptation to the wants of the public.

GRAND SILVER MEDALS AWARDED THE EXCELSIORS AT THE

New England Fair, held at Lowell, Mass., Sept., 1871 and 1872; New Jersey State Fair, held at Waverly, N. J., Sept., 1871 and 1872; the first premium at the New York State Fair, 1871; Western New York Fair, 1871; Ohio State Fair, 1871 and 1872; Northern Ohio Fair, 1871 and 1872; Michigan State Fair, 1871 and 1872; Indiana State Fair, 1871; Wisconsin State Fair, 1871 and 1872; Tennessee State Fair, 1871; Virginia State Fair, 1871; South Carolina State Fair, 1871.

For description of Mowers, and particulars, send for catalogue. Agents wanted. A liberal discount to the trade.

BRADLEY'S CUSHIONED HAMMER.



This Hammer is a great improvement over the old style of helve hammers. It is all made of Iron and Steel except the helve and cushions. It is portable, takes up but little room, and makes no noise except the stroke of the hammer. It takes less power to drive it, and it turns out more and better work. The helve is nicely balanced upon two adjustable hardened steel centers, and there is no bind or friction connected with its action. It will endure more hardships at less expense for repairs, and, consequently, outlasts any other. Its capacity is greatly increased, but not at the expense of its size, convenience or durability It strikes a more accurate, forcible and elastic blow than any other hammer. It is being used and is peculiarly adapted for the exceeding difficult work of swedging cotton spindles; no other hammer has been able to do this work as perfectly and economically. It is the favorite of every hammersman; it promptly obeys his every touch, and he soon regards it as a thing of life. *We warrant them as recommended*, and refer you to the following parties now using them:

W. H. Haskell & Co., Pawtucket, R. I.
Cole Brothers, Pawtucket, R. I.
American File Co., Pawtucket, R. I.
Fales, Jenks & Son, Pawtucket, R. I.
Providence Tool Co., Providence, R. I.
Nicholson File Co., Providence, R. I.
Woonsocket Iron Foundry, Woonsocket, R. I.
For particulars address

John Berkenhead, Mansfield, Mass.
Steele & Condict, Jersey City, N.
Silsby Mfg. Co., Seneca Falls, N. Y
Cowing & Co., Seneca Falls, N. Y.
Rumsey & Co., Seneca Falls, N. Y.
Clapp, Fitch & Co., Auburn, N. Y.
Sweet, Barnes & Co., Syracuse, N. Y.

Warder, Mitchell & Co., Springfield, O.
Robert Doyle, Watseca, Ill.
Furst & Bradley Mfg. Co., Chicago, Ill.
Chicago Plow Co., Chicago, Ill.
Mark H. Richards, Pottstown, Pa.
Peters Bros. Mfg. Co., Marshall, Mich.
Studebaker Bros. Mfg. Co., South Bend, Ind

BRADLEY MFG. CO., Syracuse, N. Y.

SEND TO THE

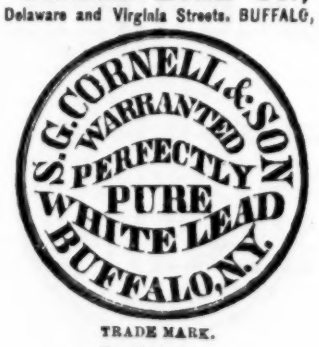
FOR SAMPLE CARDS.

Our Paint is made of the very best material known to painters, viz: White Lead, Zinc and Linseed Oil, chemically combined, and is superior to any paint known to the trade. The advantages being that
It is ready for use.
It is applied with less labor.
It shows a beautiful enamel surface.
It does not chalk or peel off.
It does not run from nail holes or corners.
It is fire proof and water proof.
It covers old work as well as new.
It is the best paint for iron buildings.
It is equal to any for covering brick.
It is a perfect wood preservative.
Rain, before dry, does not wash it.
It is durable, retaining its enamel and freshness.
☞ Sold by the Gallon only, in Cans or Barrels.

Office, 43 Chambers St., N. Y.

Cornell Lead Co.,

Cor. Delaware and Virginia Streets, BUFFALO, N.Y



TRADE MARK.
Manufacturers

WHITE LEAD Dry and in Oil,
Lead Pipe, Sheet and Bar Lead.

S. G. CORNELL, Prest. A. P. THOMPSON, Vice-Prest.
S. DOUGLAS CORNELL, Secy.

White Lead, &c.

Union White Lead Mfg. Company,
26 Burling Slip, New York.,
B. W. How, Secretary. James How, President.
MANUFACTURERS OF
White Lead, Red Lead, Litharge, Orange Mineral.

Brooklyn White Lead Co.

TRADE MARK.
White Lead, Red Lead and Litharge.
89 Maiden Lane, NEW YORK.
FISHER HOWE, Treas.

JOHN JEWETT & SONS

Manufacturers of the well known Brand of
WHITE LEAD.

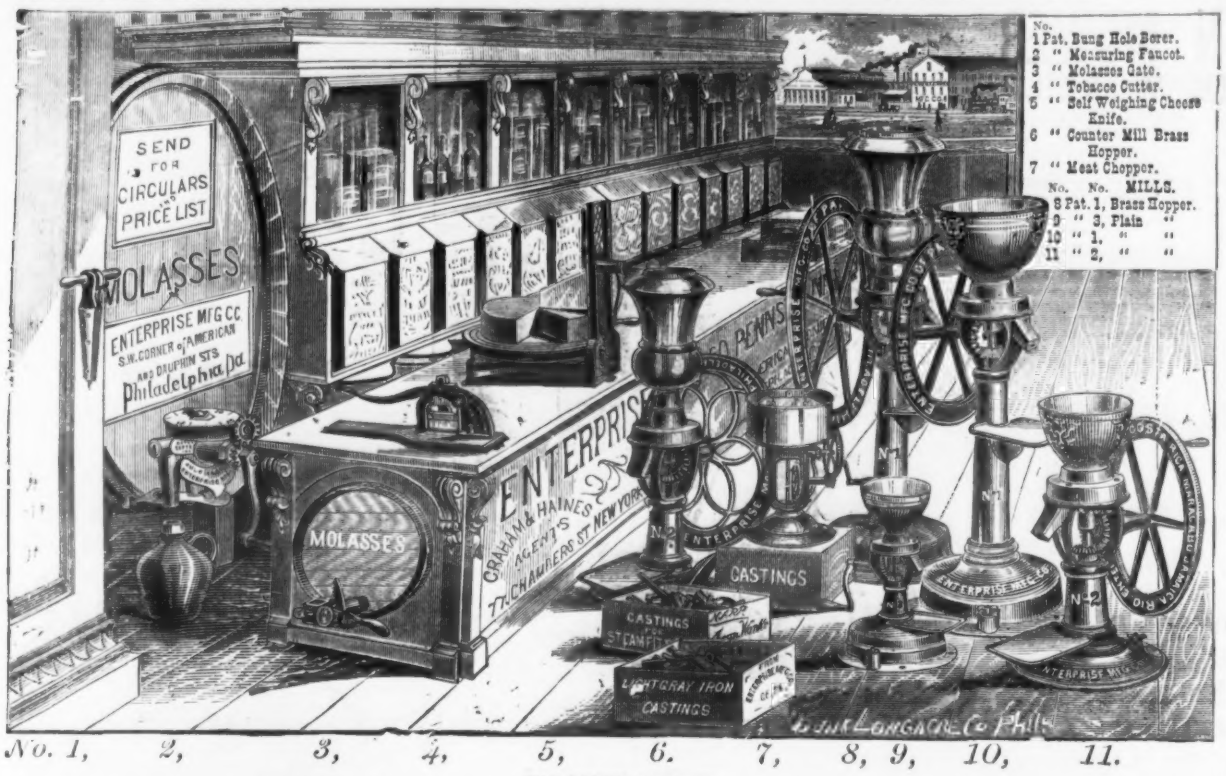
TRADE MARK.
Also Manufacturers of
LINSEED OIL
AND FLOOR OIL CLOTHS,
182 Front Street, NEW YORK.

TRADE MARK.
The Atlantic White Lead and Linseed Oil Company,
MANUFACTURERS OF
White Lead (Atlantic), Red Lead Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York

John T. Lewis & Bros.,

No. 231 South Front St.,
PHILADELPHIA.

TRADE MARK.
MANUFACTURERS OF
PURE WHITE LEAD, RED LEAD
Litharge, Orange Mineral,
Linseed Oil
AND PAINTERS' COLORS.



No. 1, 2, 3, 4, 5, 6. 7, 8, 9, 10, 11.

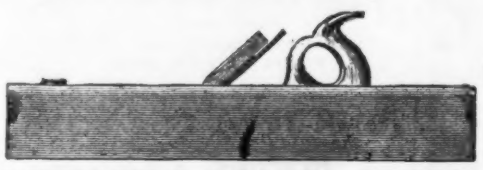
FOR PRICES ADDRESS

ENTERPRISE MFG. CO., of Pa., HARDWARE MANUFACTURERS, W. Cor. of American and Dauphin Sts., PHILADELPHIA. or **GRAHAM & HAINES, Agents,** 88 Chambers St., New York.

SANDUSKY TOOL CO.,

MANUFACTURERS OF

Planes, Plane Irons, Carpenters', Cabinet Makers' and Coopers' Tools,



Bench, Hand and Tail Screws, and Chisel, File and Auger Handles.

SANDUSKY TOOL CO., Sandusky, Ohio, or GRAHAM & HAINES, 88 Chambers Street, N. Y.

Headquarters for

Henry Disston & Sons' Saws,

Hand, Mill, Circular and Cross Cut.

ALSO,

Plumbs and Levels, Try Squares, Gauges, Trowels and Barker's Reversible Butt.

A full assortment constantly on hand. Address orders to

GRAHAM & HAINES, 88 Chambers Street, N. Y.

Samuel Loring's Tacks and Rivets.

Warehouse, 88 Chambers Street, New York.

A full assortment of

TACKS (all kinds), BRADS, TRUNK, CLOUT, HUNGARIAN and FINISHING NAILS.

Also, BLACK and TINNED RIVETS always on hand for immediate delivery, if required.

GRAHAM & HAINES, 88 Chambers Street, New York, Agents.

Philadelphia Tool Co.,

MANUFACTURERS OF

Davis' Patent Duplex Wrench,

A tool well made of **Best Materials**, combining all the good qualities of a regular Nu Wrench of equal size with that of at least six pairs of Pipe Tongs. For circulars and price lists, address,

PHILADELPHIA TOOL Co., Office & Works, S. W. cor. 13th & Buttonwood Streets, Phila., Or *GRAHAM & HAINES, Agents, 88 Chambers Street N. Y.*

SMITH, BURNS & CO.,

Manufacturers of

Galvanized and Japanned Sheet Iron Goods and Tin Ware.

Coal Hods. Patent Stamped Corrugated Riveted Bottom.
Fry Pans. "Excelsior" Polished.
Excelsior Broiler. Best and Cheapest in the market.
Combined Chamber and Commode Pail,
Ash Cans, Galvanized and Japanned,
Galvanized Water Pails, Well Buckets,
Chamber Pails, Tea Kettles, &c., &c.
Toilet Sets. Fancy and Grained.
Chamber Pails, Slop Pails, Foot Tubs, Baths, Water Carriers, Coolers, &c., &c.
Stamped and Piece Dish Pans and Plain Tin Ware.

Send for Illustrated Catalogue.

Warehouse, 45 Cliff Street, between Beekman and Fulton Streets, NEW YORK.

HOWE'S

Patent Family Glue Pot.

The Pot and Cup are made of Cast Iron, like the ordinary Glue Pot, with a cover and serviceable brush. It is altogether the best of the cheap Glue Pots in the market, being in everything except size exactly the same as those used by mechanics. From the large sales in the past, we are convinced that it supplies a necessity long felt where Glue is required—in the family, store, bank and office. The Glue is prepared in a manner to prevent all decay or mould. It is always ready for use, and will save many dollars. They are packed half a dozen in a box, and twelve boxes in a case. Price, per doz. $5, with a liberal discount to the trade.

Orders should be addressed to the manufacturers

The J. & E. Stevens Co., Cromwell, Conn.,

Or to the sole agents

Graham & Haines, 88 Chambers St., N. Y.

CAUTION.

BUY ONLY THE

GENUINE FAIRBANKS SCALES,

Manufactured by

E. & T. FAIRBANKS & CO.

Standard Scales.

Stock Scales, Coal Scales, Hay Scales, Dairy Scales, Counter Scales, &c.

Scales repaired Promptly and Reasonably.

For sale, also, Troemner's Coffee and Drug Mills, Composition Bells, all sizes Letter Presses, &c., &c.

THE MOST PERFECT

ALARM CASH DRAWER.

MILES ALARM TILL CO.'S

EVERY MERCHANT SHOULD Use them.

EVERY DRAWER Warranted.

SOLD AT

FAIRBANKS' SCALE WAREHOUSES,

FAIRBANKS & CO.,

311 Broadway, N. Y.; 93 Main St., Buffalo, N. Y.

338 Broadway, Albany, N. Y.

Fairbanks, Brown & Co., 118 Milk Street, Boston.

For sale by leading Hardware Dealers.

WM. P. KELLOGG & CO.,

Troy, N. Y.,

Best Made and Best Finish

Curry Combs, Boring Machines, Portable Forges,

ALSO,

COOLEY'S PATENT WHIP RACK.

GEORGE WHEELER,

118 CHAMBERS ST. NEW YORK AGENT.

Pipe, Fittings, &c.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS

For STEAM, WATER and GAS.

Wrought Iron Pipe & Fittings, Plain and Galvanized

PLUMBERS' MATERIALS.

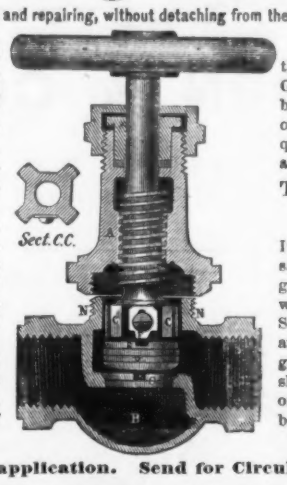
Illustrated Catalogue sent by express to the Trade on application.

Factory, Paterson, N. J. 56 John Street, N. Y.

POWELL'S PATENT

Self-Adjusting Globe Valve.

Adapted for Re-griading and repairing, without detaching from their position while in use.



These Valves are so constructed that the working gear of an ANGLE, GLOBE or CHECK can be all changed or transposed from one to the other without in the least affecting their qualities as a STEAM TIGHT VALVE. We venture to assert that this cannot be said of any other Globe Valve in existence.

It is the only LOOSE DISC VALVE that can be re-ground without separating the Disc from the Stem. It is the only Re-grinding Valve whose valve stem is adapted to be guided to seat, without the aid of an additional piece.

The Stuffing Box can be packed with a full head of steam on the Valve, whether it be closed or open to its fullest extent. The Screw of the Nut which connects it to the Globe is so completely protected by the steam tight joint at the top of the neck, that no cement is required, and it can be unscrewed at any time without difficulty.

TO RE-GRIND THE VALVE

It will be seen that it is only necessary to release the slotted pin F, by giving a half turn to the screw which confines it—drop into the Slot S of the valve, as seen in cut, and fasten it there. When the grinding is accomplished, the slotted pin is withdrawn to its original position and fastened, to be used again when necessary.

Sample Valve sent on application. Send for Circular and Price List.

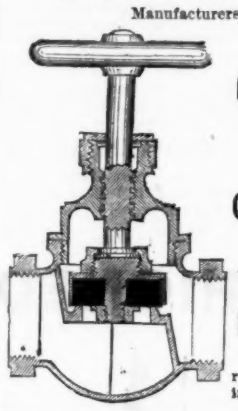
PANCOAST & MAULE,

227 Pear Street, PHILADELPHIA.

Nelson, Finkel & Co.,

439 East 10th St., New York,

Manufacturers of



Jenkins' Patent **Compression Valves** AND **Gauge Cocks** Also, **Nelson's Patent LUBRICATOR.**

Warranted the most reliable and durable in the country.

CAST IRON PIPES

FOR WATER AND GAS.

Branches Retorts, &c.

Warren Foundry & Machine Co.,

PHILLIPSBURG, NEW JERSEY.

EATON & COLE.

Manufacturers of

Sole Agency for the East.

Wrought Iron Pipe Fittings, *BRASS VALVES,*

COCKS, TOOLS, &C.,

58 John Street, NEW YORK.

GRAFF TUBE WORKS.

WILLIAM GRAFF & CO.,

Manufacturers of Plain and Galvanized

Wrought Iron Pipe

For

Gas, Steam, Water, Oil, &c.,

No. 140 First Ave., PITTSBURGH, PA.

Pipe of any Size, Length or Thickness furnished to order.

Chas. Gregg Stearns, Pres. A. F. Weaver, Treas.
Geo. Watson, Sec.

THE CHARLES GREGG MANUFACTURING CO.

FITTINGS FOR

Steam, Gas and Water,

PLAIN AND GALVANIZED

WROUGHT IRON PIPE,

Nos. 62 & 64 Gold Street, NEW YORK.

Business Established, 1836. Incorporated, 1872

Industrial Tube Works.

ISAAC J. GRIFFITHS & BROS.

Manufacturers of

Wrought Iron & Galvanized Tubes

For Gas, Steam and Water.

Brass and Iron Valves, Cocks,

Cast and Malleable Iron Fittings.

Tubes cut and fitted to plans and specifications.

1529, 1531, 1533 & 1535 South 7th St., PHILADELPHIA.

WM. S. CARR & CO.

Sole Manufacturers of

Carr's Patent Plumbers' Goods,

Pumps, Water Closets, Fountains, Vases, &c.

OFFICE AND WAREROOMS,

106, 108 & 110 Centre Street,

Factory, Mott Haven, New York.

W. ROSE & BROTHERS

WEST PHILADELPHIA,

Manufacturers of

Plasterers' and Brick Trowels,

Hammers and Chisels.

ALSO,

Saddlers' Round Knives, etc.,

N. E. cor. 36th & Filbert Sts.

☞ Please send for Price List.

PHILADELPHIA.

(Corrected weekly by Loyd, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days' interest added at 10 per cent. per annum.

ANVILS.

Solid Cast Steel ... ℘ ℔ 12½c
Peter Wright's ... ℘ ℔, gold, 12½c
Wilkinson's ... 11½c
Eagle, ℘ ℔ 11 cents, currency ... dis 15%

APPLE PARERS.

Reading / Turn Table ... per doz $8 50
Union ... per doz 8 00

AXES.

Mann's Light ... Per doz. $13 00 @ 14 00
Hunt's, Light ... $14 00 @ 14 50
Red Indian, all sizes ... $13 00 @ 13 50
Red Chieftian " ... $13 50 @ 14 00
Crown Prince ... $14 00 @ 14 50

AUGERS AND AUGER BITS.

Pierce's Patent Twist Bits ... dis 20 @ 20&5%
Bates' & Ives' Bits ... dis 20&10%
Douglass' Bits ... dis 30%
Cook's Bits ... dis 25&10%
Bonney's Pat. Hollow Augers ... dis 25%
Russell Jennings' Bits ... dis 10%
Bates' & Ives' Nut Augers ... dis 20&10%
Douglas Nut Augers ... dis 30%
Watrous' Ship Augers ... dis 10%

BALANCES.

Landers, Frary & Clark's ... dis 10 @ 15%
Chatillon's ... dis 10 @ 15%
Morton's ... dis 10 @ 15%
Common Spring, with Hook ... ℘ doz $1 38 @ 2 00

BELLS.

Bevin Bros. Mfg. Co. Hand Bells ... dis 50%
Extra Light Hand Bells ... dis 50&10%
Other makers, light ... dis 50&10%
Connell's Door Bells ... old list net
Western and Kentucky ... dis 50%

BORING MACHINES.

Bates' Mfg. Co., complete with augers ... dis 10 @ 15%
Douglas' " " " ... dis 10 @ 15%
Common No. Augers ... $4 25 @ 4 00
Angular, Extra, No. Auger ... 5 50 @ 5 00

BOLTS.

Eastern Carriage Bolts ... dis 60&20%
Western " " ... dis 60&20%
Philadelphia Carriage Bolts ... dis 40%
Wrought Shutter Bolts ... dis 35&10%
Cast " " ... dis 35%

BRACES.

Barber's ... dis 30&10 @ 40%
Bartholomew's ... dis 10 @ 15%
Spoffard ... dis 37½%

BUTTS.

Cast Fast Joint, Narrow ... dis 15%
" " Broad ... dis 30%
Cast Loose Joint ... dis 40%
" Acorn Drilled ... dis 25&10%
Wrought Loose Pin ... dis 20%
" Table & Back Flaps ... dis 5%
" Narrow ... dis 10%
" Loose Joint ... dis 25%
Parker's Blind Butts ... dis 30%
Shepard's " " ... dis 30%
Clark's " " ... dis 30%
Lull & Porter's " ... dis 25 @ 25&5%
Palmer's " ... dis 30 @ 30&5%
Garretsons' " ... dis 40%

CHAINS

German Halter ... new gold list @ dis 10%
" Coil ... new gold list @ dis 10%
Galvanized Pump ... ℘ ℔ 15c
English Coil, less than cask ... add ⅛c. ℘ ℔
Common Chain ... ⅜c. ℘ ℔ less.
Best Proof Coil Chain—

℘ ℔	14½	11¼	10½	10	9¾	9½	9c gold
	3-16	¼	5-16	⅜	7-16	½	⅝ in.

By the cask, 560 lbs., discount ⅛c per lb. Common Chain, ⅜c per lb. less than proof.

CHISELS.

Socket Framing ... dis 60 @ 60&5%
Socket Firmer ... dis 60 @ 60&5%
Tang Firmer ... dis 40 @ 40&5%
Beaty's Framing and Firmer ... dis 10 @ 10&5%

CASTERS.

Porcelain Wheel ... dis 20 @ 20&5%
Iron ... dis 20 @ 20&5%
Brass ... dis 20 @ 20&5%

CLOTHES WRINGERS.

Reliance advanced March 7 ... per doz $72 00
Crown " " 7 ... " " 72 00
Monitor " " 7 ... " " 72 00
Universal " " 7 ... " " 72 00
Novelty " " 7 ... " " 72 00
In 5 dozen lots assorted, at one time $70 00 per doz.

COFFEE MILLS.

Common Box and Side advanced April 1872 ... dis 15%
Patent " " " " " ... dis 10%

CUTLERY.

American Pocket (best) ... dis 20 @ 25%
Landers, Frary & Clark, J. Russell & Co., and Lamson & Goodnow Mfg. Co. Manufacturers' net prices

DRAWING KNIVES.

Hart Mfg. Co.'s ... dis 60 @ 60&5%
Concave Adjustable Handle ... dis 10%
Beatly ... dis 10%

FILES.

Nicholson Mill Files ... new list, $5 00 to £ cur
" Bastard ... " " 5 00 to £ cur
" Taper ... " " 5 00 to £ cur
Butcher's Mill ... 5 75 to £ gold
" Bastard ... 5 50 to £ gold
" Taper ... 5 50 to £ gold

FLUTING MACHINES.

Royal, No. 1, 4½ inch Rollers ... list $6 00
" No. 2, 6 inch Rollers ... list 7 00

HAMMERS AND HATCHETS.

Yerkes & Plumb's ... dis 5 @ 10%
Hammond & Son's ... dis 5 @ 10%

HINGES.

Strap and T ... dis 15%
Bonney's No. 1 Gate ... dis 25%
" No. 2 & 3 ... dis 35%

HORSE NAILS.

	Nos. 6	7	8	9	10
Ausable Horse Nails	27	25	24	23	22
Globe " "	29	26	25	24	23
Brundage " "	26	24	23	22	21

	Nos. 5	6	7	8	9	10
Putnam " "	32	28	26	25	24	23

On Ausable Globe & Brundage 1000 ℔ lots ... dis 5%

KNOBS.

Door (regular manufacture) ... dis 40%
Rim and Mortise ... dis 40%
Porcelain and Mineral ... dis 40%

LOCKS AND LATCHES.

Rim and Mortise ... dis 25%
Till and Cupboard ... dis 20 @ 25%
American Padlocks ... dis 40%
Trunk Locks ... dis 5 @ 10%
Thumb and Roggens Latches ... net @ dis 10%

MATTOCKS.

Long and Short Cutter ... dis 10%
Western Pattern ... dis 10%
Pennsylvania Pattern ... dis 10%

MOLASSES GATES.

Enterprise Mfg. Co.'s Measuring Faucets ... dis 20%
Stebbins' Gates ... dis 50 @ 50&10%
Lincoln's ... dis 40 @ 40&10%
Landers, Frary & Clark's, Petroleum dis 10 @ 10&10%
Taylor's Petroleum Faucets ... dis 20 @ 20&10%

RAKES.

Cast Steel Garden ... dis 30%
Malleable " ... dis 33⅓%
Wood Head Iron Teeth ... dis 30 @ 40%

RULES.

Rules ... dis 60%

SQUARES.

Steel Squares, new list ... dis 50%
Iron " " " ... dis 50%

SAWS.

Disston's Cross Cut ... dis 12½%
Disston's Hand ... dis 7½%
Wm. McNiece's Hand, Cross-Cut and Circular, new list ... dis 15%
Boynton's Lightning, new list ... dis 30%

SHOVELS AND SPADES.

Rowland's Plain Back, list Feb. 1873 ... dis 20%
" Back Strap " " " ... dis 20%
Oliver Ames & Sons, advanced April 8 ... net list
Brady Shovel Co ... dis 7½%

SAD IRONS.

Reading (planed face) ... per lb. 5½c.
Coquanock (polished face) ... " 5c.

STOVE POLISH.

Gem ... per gross $5 00
Onyx ... " $5 00

SCYTHES.

Golden Clipper ... ℘ doz $11 50
Clipper No. 10 ... " 10 50
Common Scythes ... ℘ doz $7 00 @ 10 00

SCREWS.

Iron (list Mar 6) ... dis 50%
Brass (Brass Screw list) ... dis 40%

SPOONS.

Plated Spoons, Rogers Bros.' ... dis 25 @ 25&5%
Britannia, Parker's and Boardman's ... dis 25 @ 25&10%
German Silver ... list net
" " Light ... dis 5%

TRY SQUARES.

Stanley Rule & Level Co ... dis 40%
Diston's ... dis 12½%

TACKS, CLOUT AND FINISHING NAILS.

Half Weight Tacks ... dis 70%
" " by case ... dis 70&7½%
Clout and Finishing Nails ... 7½%
" " by the case ... dis 7½%

TRAPS.

Genuine Oneida—Newhouse list ... dis 20%
Imitation " " ... dis 20&10%

WRENCHES.

Coes Genuine ... dis 30%
Coes Imitation Wrought Bar ... dis 40%
" " Malleable Bar ... dis 50%
" Pattern Malleable Bar ... dis 50%
Tafts Wrought Bar ... 60%
Tafts Malleable Bar ... 65%

WIRE.

No. 0 to 18 ... dis 20 @ 22½%
No. 19 to 26 ... dis 27½ @ 30%
No. 27 to 36 ... dis 33⅓ @ 35%
Coppered 0 to 12 ... dis 15 @ 20%
Tinned Broom Wire ... dis 15%

Bradlee & Co., Office Nos. 19 & 21 South Fourth st., Philadelphia. Price list of Proved and Warranted Chains. Discount ⅛c. per ℔.

SHORT LINK CHAIN.

Size. Inches.	Average Wt. Per Fathom. Lbs.	Proof. Tons.	Price Cts. Per Lb.
½	.15	4	10½
9-16	.19	5	10
5-8	.25	6	9½
11-16	.30	8	9·3
¾	.35	10	8¾
13-16	.40	12	8⅝
⅞	.47	14	8½
15-16	.54	16	8⅜
1	.60	18	8¼
1 1-16	.67	20	8⅛
1⅛	.74	23	8
1 3-16	.82	26	7⅞
1¼	.90	28	7¾

All larger sizes same price as 1¼ inch.
Stud Chain 2½c. less than same size close link.

PITTSBURGH.

From the Pittsburgh Commercial.

FLAT BAR.

1½ to 4 by ⅜ to 1 inch ... 4·6c
4¼ to 6 by ⅜ to 1 inch ... 4·8c
1¾ to 6 by 1⅛ to 1½ inch ... 5·0c
1¼ and 1⅜ by ⅜ to ¾ inch ... 4·8c
1 and 1⅛ by ⅜ to ¾ inch ... 4·9c
⅝, ¾ and ⅞ by ⅜ to ⅝ ... 5·0c

HORSE SHOE.

All sizes ... 6·1c
Nail rods ... 8 5c

HEAVY BANDS.

3½ to 6 by ¼ and 5-16 inch ... 5·2c
1½ to 3¼ by ¼ and 5-16 inch ... 5·3c
⅞ to 1⅜ by ¼ and 5-16 inch ... 5·6c
½ to ¾ by ¼ and 5-16 inch ... 5·8c

LIGHT BANDS.

3 to 6 by 3-16 to No. 12 ... 5·6c
1½ to 2¾ by 3-16 to No. 12 ... 5·8c
1 to 1⅜ by 3-16 to No. 12 ... 6 2c
½ to ⅞ by 3-16 to No. 12 ... 6·8c

HOOPS.

2¼ to 3 inch ... 5·9c
3⅛ to 4½ inch ... 6·1c
1¾ to 2 inch ... 6·1c
1⅜ to 1 11-16 inch ... 6·4c
1⅛ and 1¼ inch ... 6·7c
1 inch ... 7·1c
⅞ inch ... 7·6c
¾ inch ... 8·1c
⅝ inch ... 8·6c
½ inch ... 9·1c

ROUND AND SQUARE.

1 to 1⅞ inch ... 4·6c
2 to 2¾ inch ... 4·9c
3 to 3½ inch ... 5·1c
3¾ to 4 inch ... 5·6c
⅝ to 9-16 inch ... 5·0c
½ to 7-16 inch ... 5·3c
⅜ inch ... 5·4c
5-16 inch ... 5·8c
¼ inch ... 6·2c
3-16 inch ... 8·2c

OVAL IRON.

⅞ to 1¼ inch ... 5·2c
⅝ to ¾ inch ... 5·4c
½ inch ... 5·6c
⅜ inch ... 6·2c

HALF OVAL AND HALF ROUND.

⅞ to 1¼ inch ... 5·5c
⅝ to ¾ inch ... 6·0c
½ inch ... 6·7c
⅜ inch ... 8·2c

	Boiled.	Charc'l.	Juniata.
Sheet Iron, 10 to 14	6·2	7·7	9·2
" " 15 to 20	6·4	7·9	9·4
" " 21 to 24	6·6	8·1	9·6
" " 25 to 26	6·8	8·3	9·8
" " 27	7·0	8·5	10·0

All cets over 28 in. wide, ¼c. ℘ ℔ extra.

TANK IRON.

3-16, ¼ and ⅝ inches thick ... 6·0
Boiler Plate Iron ... 7·9
Heads not flanging ... 7·1
Heads flanging ... 8·9
Plow Slabs ... 6·8
Plow Wings ... 7·3

RAILROAD IRON—COUNTERSUNK AND PUNCHED.

1¼ by ⅜, 7-16 and ½ inch ... 5·6
1¼ by ¼ and 5-16 inch ... 6·1
1½, 1¾ and 2 by ⅜ and ⅝ inch ... 5·1
1⅛ by ⅜ inch ... 5·3

EXTRAS FOR CUTTING TO LENGTH.

Flat bars and rounds and squares ... 1c
Flat bars for tire ... 1c
Heavy bands ... 3c
Light bands and wagon box iron ... 4c
Hoops ... 5cc

TERMS.

Note or acceptance at sixty days, with currant rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within fifteen days of date of invoice. Payment to be made in New Bork exchange, United States Treasury notes, or their equivalent. No discount on bills of less than $50.

Heavy Hardware.

The following are the card rates of Lewis, Oliver & Phillips:

Iron, standard list, assorted sizes, for large orders, 4·6c, card rate, 2% off net.
Iron wedges ... 6¼c ℘ ℔ net
Norway Nail rods ... 9½c ℘ ℔ net
Fence Pickets—
⅜ round, bent to shape ... 35c ℘ ft. fence, less 5%
Discount off Standard List.
Carriage and tire bolts ... 60% & 10%
Plow blots ... 20% off net
Stove bolts ... list net
Machine and square head bolts new list ... 20% off net
Coach and lag screws, new list ... 20% off net
Bolt Ends, new list ... 20% off net
Square and hexagon nuts and washers, new list ... 4c ℘ ℔ off net
Washers ... new list, 4c ℘ ℔ off
1c. ℘ ℔ extra for less than 1 keg of each size.
Harrow teeth, in lots of 1 ton or more, 1 in. diam 5¼c; ⅞ & ¾ in. diam. 5½c; ⅝ in. diam. 5¾c ℘ ℔.
Patent Headed Harrow Teeth, packed in casks ½c extra ℘ ℔ net.
Skein bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 9c; 9-16 in. diam. 10c; ½ in. diam. 11c. 1c. ℘ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinge, ¾ to 1in. diam. 10½c; ⅝ in. diam. 11½c; ½ in. diam. 13½c ℘ ℔, net.
Screw and Strap Hinges, in lots of 50 pairs or more, 14 to 36 in. long, 7½c; 8, 10 and 12 in. long, 9c ℘ ℔ net.
Strap and T Hinges ... 15% net
6 months purchases over $1000, 5% dis. allowed.
Screw hitching rings ... $7 ℘ 100 net
Duck nest tuyere irons ... $16 50 ℘ doz. net
Cast iron washers ... 5c ℘ ℔ net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 feet long ... ℘ ℔ 5¾c
1 to 2 in. diam. from 4 to 8 feet long ... 6¼c
1 to 2 in. diam., from 1½ to 4 feet long ... 6¾c
⅝, ¾ and ⅞ in diam., over 4 feet long ... 7c
⅝, ¾ & ⅞ in diam., from 1½ to 4 feet long ... 7½c

WAGON HARDWARE.

Wagon Box Strap Bolts—
10 in. long by 7-16 at screw end, ℘ set of 8 bolts ... 55c
12 " ½ " ℘ " 8 " ... 70c
12 " ⅝ " ℘ " 8 " ... $1 00
14 " ⅝ " ℘ " 8 " ... 1 10
16 " ⅝ " ℘ " 8 " ... 1 20
5 cts. ℘ set for each additional inch over 14 inch. by ⅝. All lengths made.
Wagon Box Rods, narrow track each ... 18c
Wagon Box Rods, wide track, each ... 20c
Single Tree Irons, per set of four pieces ... 38c
Wt. Iron Bolster Plates, 2¾ in. wide, per set ... 60c
" " 3 " ... 65c
" " 3¼ " ... 70c
" " 3½ " ... 75c
Wagon Brake Ratchets ... 16½c each
" " finished with guard 45c each
Wrought rub irons ... 11c each
Wrought Hammer Straps, heavy pattern ... 16c each
" " " light pattern ... 13½c each
Stay Chain Hooks ... 8c each
" " " " heavy ... each 12c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 50 set ... 20% dis.
Wagon Box Staples, 1½ to 2½ in. to clinch per 1000, $14 00 net
Wagon Box Staples, Box Iron, to rivet on, per 1000, $11 00 net
Neck Yoke Eyes, each ... 5¾c net
Neck Yoke Eyes, with ⅜ inch rings ... 8¼c net
King Bolts, ⅞, 1, 1⅛, and 1¼ in. diam. ℘ ℔ ... 5¾c
Wagon Rivets, ex. large, oval and steeple head, ¼ in. diam., all lengths, ℘ ℔ ... 11c
Wagon Rivet, 3-16 inch diam., all lengths ... 13c
Wagon Rivets & nails in 5 ℔ paper boxes, ℘ ℔ ex 1c
Wagon and Hinge Nails, ℘ ℔ net ... 17c
Coupling Plates / Double Tree Plates / Tongue Plates ... 9½c ℘ ℔ net
Neck Yoke Plates ... ℘ ℔ 12c
Tongue Cap Iron, 1¾, 2 and 2¼ in. wide, same price ℘ ℔ as Band Iron.
Wagon Chains, Stay Lock and Tongue 5-16 in., 12½c; ¼ in., 14c.

Nails, Brads, Spikes, etc,

CUT NAIL LIST.

10d to 60d nails, fence, and brads ... $5 25
8d and 9d nails, fence and brads ... 5 50
6d and 7d nails, fence and brads ... 5 75
4d and 5d nails, fence and brads ... 6 00
3d nails, fence and brads ... 6 75
2d nails, fence and brads ... 8 00

FINE BLUED.

3d ... $8 00
2d ... 9 00

CASING.

10d to 30d ... 6 00
8d and 9d ... 6 25
6d and 7d ... 6 50

FINISHING.

10d to 50d ... 6 50
8d ... 6 75
6d ... 7 00
4d ... 7 25

CLINCH.

Clinch nails ... $7 00

CUT SPIKES.

3 to 6 inch ... $5 50

BARREL.

¾ inch ... $9 00
⅞ inch ... 8 25
1 inch ... 7 75
1⅛ inch ... 7 00
1¼ inch ... 6 75
1⅜ inch ... 6 25
1½ inch ... 6 00

12½c ℘ keg off lots of 100 kegs and over.

TERMS.—Note or acceptance at sixty day's, with exchange on New York, or discount of two per cent. for cash, if remitted within ten days from date of invoice. Payments to be made in New York Exchange, United States Treasury notes, or their equivalent. No discount on bills of less amount than $50.

LENGTH OF NAILS.

2d, 1 inch; 3d, 1⅛ inch; 4d, 1½ inch; 5d, 1¾ inch; 6d, 2 inch; 7d, 2¼ inch; 8d, 2½ inch; 9d, 2¾ inch; 10d, 3 inch; 12d, 3¼ inch; 16d, 3½ inch; 20d, 4 inch; 30d, 4½ inch; 40d, 5 inch; 50d, 5½ inch; 60d, 6 inch.

BOSTON.

Corrected by Fuller, Dana & Fitz, 110 North St., Boston, Importers and Commission Merchants.

Tin Plates.

I. C. Charcoal ... per box @ 14 00
" Coke ... " @ 12 75
" Terne ... " @ 12 75

Metals.

Pig Tin, Banca, gold ... per lb. 39c
" Straits, " ... " 33c
" English, " ... " 33c
Copper, Sheathing ... " 43c
" " yellow ... " 33c
Copper Bolt ... " 45c
" Braziers ... " 45c
" Ingot ... " 37c
" Old ... "
Lead, Spanish Pig, gold ... " 6¼c
" Sheet and Pipe ... " 9·45c
" Old ... " 6¾c
Spelter, Silesian, gold ... " 8c
" American, " ... " 7c
Zinc, Sheet ... " 11c

Iron.

Sheet Iron, Russia, gold ... per lb. 18c
" English ... " 7c @ 7½c
" American ... " 8c
" Galvanized ... " 11c @ 13c
Swedes Bar Iron, Flat, gold. per ton, $145 00 @ $155 00
" Shoe Shapes, " " 160 00 @
Norway Bar Iron, Flats, " " 145 00 @ 155 00
Norway Shapes, gold, per ton, 160 00 @
Norway R'd, 2 in. to ¾ in. gld. pr. ton 150 00 @
" " 11-16 to ⅜ in. " " 167 50 @
" " 5-16 to ¼ in. " " 170 00 @
" Nail Rods, Roll'd " " 187 50 @
" " U B. " " 175 00 @
" " Benzon " " 170 00 @
" " Vasa, " " 165 00 @
" " N I W " " 162 50 @
English Refined Bar Iron, " 105 00 @
Scotch Pig Iron, " 60 00 @ 65 00
American " " 45 00 @ 54 00
Wrought Scrap Iron, " 57 50 @ 60 00

Steel.

English Tool Steel, gold ... per lb. 16c.
" Machinery Steel, gold ... " 10c.
American Tool ... " 16c.
" Machinery " ... " 11c.
Bessemer Steel ... 8½ @ 9½c
German " ... per lb. 10½c.
Spring Steel ... " 9c.
Tire " ... " 8c.
Sleigh Shoe Steel ... " 6¾c.
Toe Calk " ... " 8¾c.

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

March 15, 1873.

Axes, Chopping—Blood's ... $12 50 @ 14 50
Augers—C. S. cut ... dis 30%
Bits, Auger—Pierce's ... 25%
Jennings' ... dis 10%
Bells, Cow—Yaw's Genuine ... 20%
Bells, Hand ... dis 50&10 @ 55&10%
Bellows—Smiths' ... dis 15 @ 20%
Moulders' ... dis 10%
Bolts—Carriage and Tire, dia. neck ... dis 60 & 15%
Braces, Bit—Barber's ... dis 30 & 10%
Spofford's Patent ... dis 37½%
Brads, Cut ... dis 50&7½%
Boards—Stove, Brooks' Patent, new list ... dis 30%
Buckets—Well ... per doz $6 00
Butts—Brass ... dis 25%
Cast Loose Joint ... dis 40%
" " Pin ... dis 30%
" " " Japanned ... dis 30%
" " " Silver Tipped ... dis 20%
Wrought Narrow ... dis 10%
" Broad, Loose Joint ... dis 15%
" Table and Back Flaps ... net
Belting—Rubber ... dis 30 @ 33⅓%
Leather, new list ... dis 30 @ 30 & 5%
Beaters, Egg, "Peerless" ... per doz $4 00 @ 4 50
Brick—Bath (box of 2 doz) Best English ... $1·50
"Rutherford" ... $1 25
Bung Borers—"Enterprise" ... dis 10&10%
Chalk—White, Carpenter's ... per gross, 50c
Red, Carpenter's ... " " 75c
Blue, Carpenter's ... " " 85c
Crayon School ... " " 14c
Chisels—Firmer Socket ... dis 50&20 @ 50, 20&5%
Framing Socket ... dis 50&20 @ 50, 20&5%
Corner Socket ... dis 50&20 @ 50, 20&5%
Slick's Carpenters' ... dis 50&20 @ 50, 20&5%
Castings—Malleable ... ℘ ℔, 10½c
Cutters, Meat—Hale's Patent ... dis 10%
Cherry Seeders ... per doz $9 00

Elbows—Corrugated	5	5½	6	7	
Charcoal	$4·25	5·25	5·25	6·50	dis 10%
Russia	10·00	13·00	13·00	14·00	

Faucets—Wood, Cork Lined ... dis 50 @ 50&10%
Files—Wheeler, Madden & Clemson's ... dis 42½%
Freezers, Ice Cream—"Champion" ... dis 33⅓%
Gates—Molasses—
Patent Self-Measuring ... ℘ doz. $43 00; dis 10&10%
Hinges—Window Blind—
Shepard's Standard, and Clark's ... dis 30%
Wrought Strap and T ... dis 15%
Hods, Coal—Plain, Black and Galvanized ... new list net
Funnel, Black and Galvanized ... new list net
Fancy and Helmet ... new list net
Hammers—Maydole's ... net
Yerkes & Plumb's ... dis 5 @ 10%
Hatchets—Blood's ... net @ 5%
Hooks and Staples—Wrought ... 50&10 @ 60%
Hooks—Belt ... dis 45&10%
Hasps and Staples—Wrought ... dis 50&10 @ 60%
Planes, Bench ... dis 15%
Sad Irons ... ℘ ℔ 5¾c
Kettles—Brass ... ℘ ℔, 52½c
Enameled ... dis 30%
Knives, Drawing—Oval No. 1 ... dis 50&20 @ 50, 20&5%
Razor Blade ... dis 37½&20 @ 37½, 20&5%

Lanterns "Peerless" No.	1	5	10	
℘ doz	$26 00	$12 50	$15 00	dis 10%

"Radiant"	75	100	150	175	
℘ doz	$13·13	13·13	22·50	22·50	dis 20%

Machines—Apple Paring, Turn Table / " " Lightning ... $8·50 ℘ doz
Tinmen's ...
Doweling, Merchant's, No. 1 ... " 4 75
" " No. 2 ... " 5 00
Mills, Coffee—Box and Slide, common ... dis 10&5%
Box Union and Eagle ... dis 10%
Swift's Patent ... dis 10%
"Champion" ... dis 10&10%
Nails—Cut, Chesapeake ... $5 00 rates
Clout and Finishing ... dis 7½%
Shoe ... dis 7½%

Horse, Ausable ... No.	5	6	7	8	9	10
	30	27	25	24	23	22c

" " 1000 lbs ... dis 5%

" Clinton ... No.	6	7	8	9	10
	23	21	20	19	18c

Packing—Rubber ... dis 30 @ 33⅓%
Pencils, Slate—Soapstone ... 4 5 6 in. 3040 50c. per 100
Case lots ... dis 20%
Paint—White Lead, U. S. Gov't ... ℔ 9½c
Rivets—Iron, Black and Tinned ... dis 20%
Copper ... dis 10%
Rope—Manila, ½ inch and larger ... ℘ ℔ 17½c
Rules—Boxwood and Ivory, Stephens ... dis 50&10%
Staples—Blind, Boardman's Pat., ⅜ & ⅝ ... ℘ ℔ 37c
Skates—White's ... dis 20%
Straps, Skate—Russet and Black ... net @ 20%
Spoons—Iron Tinned ... dis 10%
" " by the case ... dis 20%
Plated Rogers' A No. 1 ... dis 25&5%
Squares—Steel and Iron ... new list 50%
Shoes, Horse—H. Burden & Sons ... ℘ keg $6 37½
Shovels & Spades—Shepard, Forsyth & Dennison ... 15%
Saws—Henry Disston & Sons ... dis 5%
Scales—Buffalo Scale Works ... dis 25%
Fairbanks ... dis 15%
Screws—National Screw Co. {Iron ... dis 50% / Brass ... dis 40%}
Shears—Seymour's ... dis 50%
Tools—Tinmen's ...
Traps, Steel—Newhouse ... dis 17½%
Tacks—Half Weight Am. Iron ... dis 70&7½%
Vises—Parallel, Buffalo ... dis 15%
Wrenches—Coes' genuine ... dis 30%
Coes' Imitation ... dis 50 & 10%
Tafts' Pattern ... dis 62½&10%
Ware—French, Tinned and Iron ... dis 20%
Stamped and Japanned ... net
Cast Iron Hollow ... dis 20@30%

METALS.

Tin Plates, Charcoal IC.

10x14 ... $14 25
12x12 ... 14 75
12½x17 ... 13 75
14x20 ... 15 25
Add for each X ... 2 50
14x20 C. terne ... $12 75 @ 13 75
20x28 C. " ... 28 50
20x28 X. " ... 33 50
Pig Tin—Straits ... 41 @ 42c
Banca ... 48 @ 49c
Solder ... No. 1 24c, No. 2 22c { 50 lbs. deduct ⅛c / 100 " " 1c
Sheet Zinc, "Lasalle," 1000 $11 00, 500 $11 10, 100 ℔ casks $11 30 ℘ 100 ℔s
Iron Wire—Bright and annealed ... dis 10 @ 20%
Coppered ... dis 5 @ 15%
Tinned ... dis 5 @ 15%
Tinned Broom, {Nos. 20 20c, 21 21c, 22 21c} ... dis 20%
Copper—Sheathing 14@18 oz ... ℘ ℔ 43c
Planished ... ℘ ℔ 49 @ 51c
Bottoms ... ℘ ℔ 45c
Bolts ... ℘ ℔ 45c
Braziers' Sheets ... ℘ ℔ 45c

Sheet Iron—Smooth Finish	Com'n	Char.	Jun
Nos. 10 to 14	6·85	8·35	10·05c
Nos. 15 to 20	7·35	8·75	10·25c
Nos. 21 to 24	7·55	8·95	10·45c
Nos. 25 & 26	7·75	9·15	10·65c
No. 27	7·95	9·35	10·85c

Am. Russia ... A. 15½c, B. 13c
Gen. Russia, No. 1 stained ... 21c
" " " clean ... 22c
Galvanized ... dis 20%

CHICAGO.

Reported by Markley, Alling & Co.

AGRICULTURAL IMPLEMENTS.

Scythes.—Dunn Edge Tool Co ... dis 25%
Hay and Manure Forks.—Otsego extra C. S. ... dis 25%
Hoes & Garden Rakes.—Jackson and Otsego ... dis 25%
Scythe Stones ... dis 25%
Scythe and Bush Snathes ... dis 20%
Harvest Rakes and Barley Forks ... dis 20%
Revolving Horse Rakes ... dis 20%
Handles.—Fork and Shovel ... dis 20%
Cradles.—Nithington, Cooley & Co ... dis 20%
" Genuine Morgan ... ℘ doz net $36·00%

AUGERS AND BITS.

Ives', extra C. S ... dis 20%
Jenning's ... dis 5%
Cooks' ... dis 25%
Snell's ... dis 10%
Snell's Car Bits ... dis 10%

AXES.

Amoskeag Yankee ... ℘ doz $13 50
" Crescent ... " 14 00
Hunt's Yankee ... " 14 50
Kennebeck Yankee ... " 12 00
Lippincott " ... " 12 50
" Crown ... " 13 00
" Beveled ... " 13 00
Jefford's Silver Steel ... " 13 00
Red Warrior, Beveled ... " 14 00
Kennebeck, Handled ... " 15 00
Boy's, Handled ... " 12 00

BOLTS.

Carriage and Tire ... dis 50&20%
Cast Barrel and Shutter ... dis 20&10%
Wrought Iron Barrel ... add 10%
" " Square ... net list

BUTTS.

Cast Fast Joint, Narrow ... dis 10%
" " " Broad ... dis 20%
" Loose Joint ... dis 35%
" " Pin, Reversible ... dis 25%
" " Japanned ... dis 25%
" " Silver Tipped ... dis 25%
Wrought Narrow, Fast Joint ... net list
" Broad, Fast Joint ... dis 15%
" " Loose Joint ... dis 15%
" Loose Pin ... dis 15%
" Table ... net list
" Brass ... dis 15%
Garretson's Blind Butts, Wood ... doz sets $2 00
" " " Brick ... doz sets 3 00
Parker's " " Wood ... doz sets 2 25
" " " Brick ... doz sets 3 25

CASTERS.

Iron Plate ... dis 20%
Brass Wheel Plate ... dis 20%
Porcelain Wheel Plate ... dis 20%
" " Bed ... dis 20%
Iron Wheel Bed ... dis 20%

CHISELS.

Butcher's Tanged Firmer ... dis 30%
" Long Paring ... dis 30%
Witherby Socket Framing ... dis 50&15%
" " Firmer ... dis 50&15%
" " Corner ... dis 50&15%
" " Slicks ... dis 50&15%

COFFEE MILLS.

Box 4 Iron ... $3 75
" 103 " ... 5 25
" 102 " ... 7 50
" 107 Britannia ... 7 50
" 106 " ... 9 25
" 25 Union ... 11 00
" 35 " ... 13 00
" 75 Cast Steel ... 11 00
" 85 " ... 13 00
Side 50 ... 4 75
" 60 ... 5 75
" 70 ... 7 25
" 90 ... 18 00
" 15 Union ... 7 00
" 20 " ... 8 00

CUTLERY.

American Table ... dis 20%
" Pocket ... dis 25%

DOOR SPRINGS.

Torry ... ℘ doz $7 50
Rubber ... " 4 00
Boon's ... " 5 00

DRAWING KNIVES.

Witherby Tool Co ... dis 50&15%
Ohio Tool Co ... net list

FILES.

Butcher's ... $7 00 £
Nicholson's ... $5 00 @ $5 50 £

HAMMERS.

Maydole's ... net list
Yerks & Plumb ... net list
Cheney ... net list

HANDLES.

Extra Axe ... ℘ doz $3 00
No. 1 Axe ... " 2 25
No. 2 Axe ... " 2 00
R. R. Pick, No. 1 ... " 2 00
Coal " " ... " 2 00
Sledge, No. 1 ... " 2 00
Hatchet ... " 65
Hammer, A. E ... " 65

HATCHES.

Amoskeag Shingling, No. 1 ... ℘ doz $7 25
" No. 2 ... " 8 00
" No. 3 ... " 8 75
" Claw, No. 1 ... " 7 75
" " No. 2 ... " 8 50
" " No. 3 ... " 9 22
" Lath, No. 1 ... " 7 50
" " No. 2 ... " 8 25
" " Solid Steel ... " 12 00

HINGES.

Strap and T ... dis 5%
Screw Hook and Strap, 8 to 12 in ... net, 10c ℘ ℔
" " 14 to 24 in ... net, 9c ℘ ℔
Hook and Eye Hinges ... net 12c @ 16c ℘ ℔
Gate, No. 35, State ... ℘ doz $3 50
" No. 3, In and Out ... " 3 50
" Blinn's Pat ... " 7 50

HORSE NAILS.

Northwestern, 8d ... 24c
Ausable, 8d ... 24c
Globe, 8d ... 26c

KETTLES.

Brass ... net 54%
Enameled ... dis 15%

LOCKS AND KNOBS.

Norwalk Lock Co ... dis 25%
Branford " ... dis 25%
Eagle " ... dis 15%
American Pad Locks ... dis 25%
Continental Lock Co ... dis 10%

MEAT CUTTERS.

Haven's Patent ... net list
Hale's " ... dis 10%
Woodruff " ... net list
Stowe's Sausage Stuffers ... net list

MOLASSES GATES.

Stebbin's Patent ... dis 40%
Enterprise " ... dis 5%

NAILS.

10d to 60d ... per keg $5 25

OIL STONES.

Washita No. 1 ... net 35c ℘ ℔
" Slips ... net 65c "
Hindostan No. 1 ... net 9c "
" Axe ... net 10c "
" Slips ... net 15c "

PICKS AND MATTOCKS.

Picks, Railroad, Axe Finish ... ℘ doz, $13 50
" Coal, Axe Finish ... " 10 00
Mattocks, L. C., Axe Finish ... " 16 50
" S. C., " ... " 16 00
Grub Hoes, Axe Finish, No. 2 ... " 12 00

PLANES.

Ohio Tool Co. Bench ... dis 10%
Sciota ... dis 15%
A. Howland & Co. Bench ... dis 10%
" " Fancy ... dis 10%
Bailey Patent Iron ... dis 15%
Plane Irons, Butcher's ... dis 30%

RIVETS.

Iron ... dis 10 @ 15%
Tinned ... dis 10 @ 15%
Copper, No. 7 ... net, ℘ ℔, 60c

RULES.

Stanley Rule and Level Co ... dis 40&10%
Hubbard & Curtiss Mfg. Co ... dis 40&10%

SAD IRONS.

Best A No. 1 ... ℘ ℔, net, 5½c
" Copper Face Star ... " 5¼c

SANDPAPER.

Wiggin & Stevens, No. 0 to 1½ ... ℘ ream, net, $4 50
" " No. 2 to 3 ... " " 5 00

SASH LOCKS.

Champion ... ℘ gross, net, $12 00
Hopkins & Dickinson ... dis 10%
Judd's Patent ... dis 10%
Corbin's Patent ... dis 10%
Clark's " ... dis 20%

SAWS.

H. Disston & Sons ... dis 5%
Champion X Cut ... ℘ foot, net, 60c
M. A. & Co. X Cut ... " " 50c

SCREWS.

American Screw Co.—Iron ... dis 45&5%
" " —Brass ... dis 25%
" " —Blued Rd. Head ... dis 25%

SHOVELS AND SPADES.

Ames' Black Shovels ... ℘ doz $15 00
" Polished " ... " 16 00
" Patent " ... " 18 00
Alling " " ... " 15 00
" " Molders' ... " 18 00
Crane's Black " ... " 12 00
" Polished " ... " 13 00
Smith's " " B. S. L. H. Rd. Pt. " 13 50
" " B. S. D. H. Rd. Pt. " 14 00
Ames' Black Spades ... " 16 50
" Polished " ... " 17 50
" Patent " ... " 18 00
Alling " " ... " 15 50
Crane's Black " ... " 12 50
" Polish'd " ... " 13 50

SCOOPS.

Alling Steel Polished, No. 2 ... ℘ doz, $14 00
" " No. 3 ... " 14 50
" " No. 4 ... " 15 00
" " No. 5 ... " 16 00
" " No. 6 ... " 17 00
" " No. 7 ... " 18 00
" " No. 8 ... " 19 00
" " No. 10 ... " 22 00
Crane's Polished, No. 5 ... " 14 00
" " No. 6 ... " 15 00
" " No. 7 ... " 16 00
" " No. 8 ... " 17 00
Crane's Black Coal, No. 4 ... " 18 00
" " No. 5 ... " 18 50
Preston, Black Scoops No. 1 ... ℘ doz $12 00
" " " " 2 ... " 12 50
" " " " 3 ... " 13 00
" Half Pol. Scoops No. 1 ... " 13 00
" " " " 2 ... " 13 50
" " " " 3 ... " 14 00
Lippincott, Half Pol. No. 2 ... " 16 00
" " " 3 ... " 17 00

WRENCHES.

Taft's ... dis 60%
Coe's Imitation ... dis 45%
Coe's Genuine ... dis 25%

WRINGERS.

Novelty Clothes Wringer ... ℘ doz $72 00
Universal " ... " 72 00
Mead's " ... " 55 00

Iron. (Pittsburgh classifications.)

Flat Bars ... ℘ ℔ 5·0 @ 5·2
Heavy Bands ... 5·4 @ 6·0
Light Bands ... 5·8 @ 7·0
Hoops ... 6·1 @ 9·3
Rounds & Squares ... 4·8 @ 8·4
Ovals ... 5·0 @ 6·4
Half Ovals & Half Rounds ... 5·7 @ 8·4
Horse Shoe ... 6·5

SHEETS.

No. 10 to 14 ... 6·6
No. 15 to 20 ... 6·8
No. 21 to 24 ... 7·0
No. 25 to 26 ... 2
No. 27 ... 7·4

HORSE NAILS.

Northwestern, Nos.	5	6	7	8	9	10
Cents ℘ ℔	30	27	25	24	23	22
Ausable	30	27	25	24	23	22

Pig Iron.

Scotch—
Gartsherrie ... $ @ 65 00
Coltness ... @ 65 00
Summerlee ... @ 64 00
Glengarnock ... @ 63 00
Eglinton ... @ 62 00
Carnbroe ... @ 61 00
Calder ... @ 61 00
Dalmellington ... @ 61 00
Langloan ... @ 61 00
Monkland ... @ 60 00
Clyde ... @ 60 00
Govan ... @ 60 00
Charcoal—
Lake Superior No. 1 ... @ 60 00
" " 2 ... @ 59 00
Stonecoal—
Chicago, No. 1 ... @ 57 00
" " 2 ... @ 56 00
Missouri " 1 ... @ 58 00
Massilon No. 1 ... @ 61 00
No. 1, Grand Tower ... @ 57 00
No. 2, " ... @ 56 00
Car-wheel—
Salisbury, all numbers ... @ 75 00
Champion " ... @ 60 00
Red River " ... @ 65 00

Steel.

THREE 1st CLASS PRIZE MEDALS. CLASSES 1, 21, 22, Great Exhibition of Industry, LONDON, 1851.

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1st UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

COCKER BROTHERS,

SUCCESSORS TO

SAML. COCKER & SON,

(Established 1752.)

SHEFFIELD, ENGLAND

MANUFACTURERS OF

CAST, SHEAR, SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION.
BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;
Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS,
HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS,
FISH HOOKS, NEEDLES. &c.

ALSO

GENERAL MERCHANTS.

Agent, JONATHAN HATTERSLEY, Cincinnati, Ohio

WM. JESSOP & SONS,

MANUFACTURERS OF

STEEL,

AND IMPORTERS OF IRON

SHEFFIELD, ENGLAND.

PRINCIPAL DEPOTS:

NEW YORK, Nos. 91 and 93 John Street.....BOSTON, Nos. 133 and 135 Federal Street.

AGENCIES:

PHILADELPHIA, Jas. C. Hand & Co .....PROVIDENCE, Cornett, Nightingale & Co.
CHICAGO, Crerar, Adams & Co.....ST. LOUIS, Henry Bakewell & Sons.
CINCINNATI, Augustus Wessel.....NEW ORLEANS, Folger & Co.
SAN FRANCISCO, Russell & Erwin Manufacturing Co.

F. W. MOSS,

Successor to JOSHUA MOSS & GAMBLE BROTHERS,

MANUFACTURER AND IMPORTER OF

STEEL AND FILES.

Principal Depots: 80 John Street, New York, and 512 Commerce Street, Philadelphia.

MOSS & GAMBLE **SUPERIOR C. S. "FULL WEIGHT" FILES,**

Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES, and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel.
Also, manufacturer of

Sheet Cast Steel, Shear, German, Round Machinery, Hammer, Fork and Shovel Steel

And GENERAL MERCHANT.

A. M. F. WATSON, General Agent.

WILSON HAWKSWORTH, ELLISON & CO.,

MANUFACTURERS OF

STEEL, STEEL WIRE, &C.,

AND GENERAL MERCHANTS,

CARLISLE WORKS, SHEFFIELD, ENGLAND.

AGENCIES:

New York, 72 John Street.
Philadelphia, 505 Commerce Street.
Boston, 6 and 8 Liberty Square.

BARROW HÆMATITE STEEL COMPANY

LIMITED.

BARROW IN FURNESS,

LANCASHIRE, England

MANUFACTURERS OF

STEEL RAILS, TYRES, WHEELS,

Axles. Shafting, Boiler and Ship Plates, Bessemer Pig Iron, &c., &c.

CHAS. CONGREVE & SON,

SOLE AGENTS FOR THE U. S.,

104 and 106 John Street, opposite Cliff Street, NEW YORK.

J. & RILEY CARR,

MANUFACTURERS OF SUPERIOR

STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

ALSO THE CELEBRATED

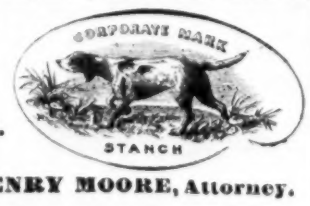
DOG BRAND FILES,

Unsurpassed, if equaled, in quality.

Bailey Lane Works, Sheffield, England.

Warehouse 82 John St., New York.

blished 1810.



HENRY MOORE, Attorney.

Steel.

SANDERSON BROTHERS & COMPANY,

(LIMITED)

MANUFACTURERS OF THE

CELEBRATED CAST STEEL,

WARRANTED MOST SUPERIOR FOR TOOLS.

DARNALL WORKS,
ATTERCLIFFE FORGE,
WEST STREET WORKS, } SHEFFIELD, ENGLAND.

IMPORTERS OF FILES,

AND

AGENTS FOR ARMITAGE'S GENUINE MOUSEHOLE ANVILS.

NEW YORK, Edward Frith, 16 Cliff.
BOSTON, H. L. Richards, 18 Batterymarch.
PHILADELPHIA, Wm. H. Sowers.
CLEVELAND, O., Cleveland, Brown & Co.
NEW ORLEANS, Rich'd Rhodes, 71 Camp.
BALTIMORE, Md., Wm. H. Cole.
MONTREAL, Saint Paul St.
NEW HAVEN, Ct., Atwater, Wheeler & Co.

FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of **"CHOICE"** Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

JOHN HOGAN, Agent.

S. & C. WARDLOW,

MANUFACTURERS OF THE CELEBRATED

Cast and Double Shear

STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

SHEFFIELD, ENGLAND.

Office of S. & C. WARDLOW, 13 Gold Street, New York.

In calling the attention of consumers of Steel in any of the parishes above enumerated, we would respectfully assure them of our ability to supply an article, that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class Material in quality, temper, and durability is needed

---

G. SANDERSON & CO.,

Manufacturers of all descriptions of

STEEL.

Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for **Turning Tools, Taps, Dies, Drills,** &c.

Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

☞ *Makers of the Celebrated ROCK BORING DRILL STEEL.*

Warehouse, 96 John Street, New York.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.

J. A. GRISWOLD. E. CORNING. E. CORNING, Jr. C. GRISWOLD.

PROPRIETORS OF THE

Rensselaer Iron Works,
Bessemer Steel Works,
Fort Edward Blast Furnace,
And Columbia Blast Furnace.

MANUFACTURERS OF

Pig Iron, Railroad Iron, Merchant and Ship Iron,

BESSEMER STEEL RAILS, AXLES, TIRES, SHAFTING,

PLATES AND STEEL FORGINGS OF ALL DESCRIPTIONS.

D. G. GAUTIER & CO.,

MANUFACTURERS OF

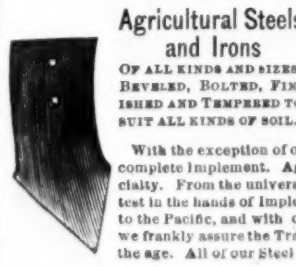
Hammered and Rolled STEEL of every description,

JERSEY CITY, NEW JERSEY.

DUDLEY G. GAUTIER. JOSIAH H. GAUTIER.

A. J. NELLIS & CO., Pittsburgh, Pa.

MANUFACTURERS OF



Agricultural Steels and Irons

OF ALL KINDS AND SIZES. BEVELED, BOLTED, FINISHED AND TEMPERED TO SUIT ALL KINDS OF SOIL.

Nellis' Original H— Horse Hay Fork Improved.

Nellis' Grapple Pulleys

☞ Send for Pamphlet.

With the exception of our Horse Hay Fork and Fixtures we make no complete Implement. Agricultural Steels and Irons we make a specialty. From the universal approval our goods have secured by actual test in the hands of Implement Makers and Farmers from the Atlantic to the Pacific, and with our facilities, experience and improvements, we frankly assure the Trade of our ability to meet the requirements of the age. All of our Steel Goods have imprint of our Trade Mark.

Steel.

Sheffield Steel Works.

(Established in 1848.)

SINGER, NIMICK & CO.

Pittsburgh, Pa.,

Manufacturers of **Extra Quality Tool**

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of **Cast and German**

Spring and Plow Steel

Elliptic and Side Springs, Seat Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators,

Reaper Bars, Crow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

ISAAC JENKS,

Minerva Iron & Steel Works,

Wolverhampton, England,

MANUFACTURER OF

"Jenks' Spring Steel," and Cast Spring Steel,

Also, TIRE, TOE CORK, SLEIGH SHOE, BLISTER AND PLOW STEEL.

VAN WART & McCOY,

SOLE AGENTS,

43 Chambers St., New York.

A full assortment of "Jenks' Spring Steel," in stock.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.,

Manufacturers of all descriptions of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.,

PITTSBURGH, PA.

Gunpowder.

GUNPOWDER.

DUPONT'S

Sporting, Shipping, and Mining

POWDER.

DUPONT'S GUNPOWDER MILLS,

ESTABLISHED IN 1801,

Have maintained their great reputation for 70 years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle and Diamond Grain Powder.

Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER

of all kinds and descriptions.

For sale in all parts of the country. Represented by

F. L. KNEELAND,

70 Wall Street, NEW YORK.

GUN-POWDER

LAFLIN & RAND POWDER CO.,

21 Park Row, New York,

invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

POWDER

IN EVERY PART OF THE UNITED STATES, from having agencies and magazines at all prominent points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale, and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands Rifle Powder:

Orange Rifle, Orange Ducking Lightning, Audubon.

SAFETY-FUSE at wholesale.

Steel.

HUSSEY, WELLS & CO.

MANUFACTURERS OF ALL DESCRIPTIONS OF

CAST STEEL,

INCLUDING

Best Refined Steel for Edge Tools.

PARTICULAR ATTENTION PAID TO THE MANUFACTURE OF STEEL FOR

Railroad Supplies, Homogeneous Plates

FOR LOCOMOTIVES, BOILERS AND FIRE BOXES,

Smoke-Stack Steel, Cast Steel Forgings for Crank Pins, Car Axles, &c.

ALSO, MANUFACTURERS OF THE CELEBRATED BRAND

"Hussey, Wells & Co. Cast Spring Steel,"

For Elliptic Springs for Railroad Cars & Locomotives.

PENN AND SEVENTEENTH STS., PITTSBURGH, PA.

BRANCH OFFICES:

30 Gold St., New York. 139 & 141 Federal St., Boston. 88 Michigan Ave., Chicago.

Pittsburgh Steel Works

ESTABLISHED IN 1845.

ANDERSON & WOODS,

MANUFACTURERS OF

BEST REFINED CAST STEEL,

Cast and German Plow and Spring Steel,

FIRST AVE., AND ROSS ST., PITTSBURGH.

BRANCH HOUSES:

Nos. 74 and 75 North Street, Boston. C. H. WHITNEY & SON, 142 Greenwich Street, New York.
W. F. POTTS, SON & CO., 1225 Market Street, Philadelphia.

First Prize awarded at Fair of American Institute, 1870.

CHROME STEEL COMPANY,

MANUFACTURERS OF BEST

CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

Works and Offices—Kent Avenue and Keap Street, Brooklyn, E. D.

W. W. W. WOOD, President. C. P. HAUGHIAN, Superintendent.

LABELLE STEEL WORKS.

REITER, LAVELY & CO.,

MANUFACTURERS OF ALL KINDS OF

STEEL.

Also, Springs, Axles, Rake Teeth, &c.

OFFICE & WORKS, Ridge, Lighthill & Belmont Sts., & Ohio River, Allegheny.

Post Office Address, Pittsburgh, Pa.

New Jersey Steel and Iron Company.

Trenton, N. J.,

Represented by COOPER, HEWITT & CO., 17 Burling Slip, New York,

MAKERS OF

ROLLED IRON BEAMS.

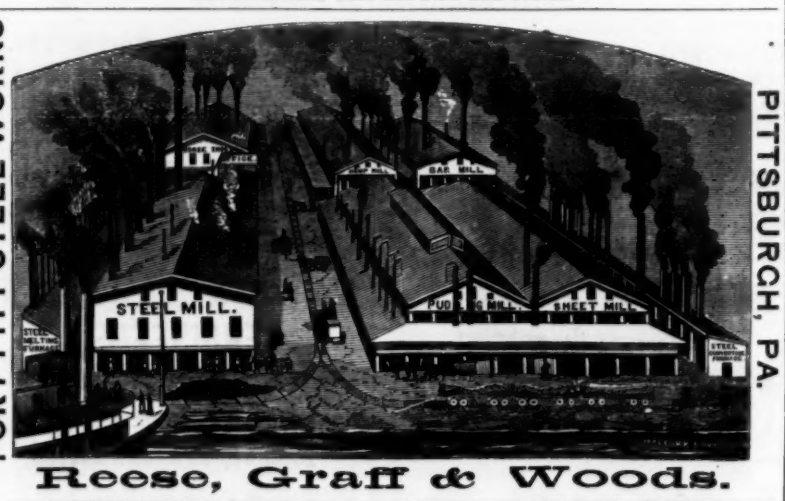
Channel Bars, the Trenton Steel Top Rails, &c., &c. Refined Iron, Brazier and Wire Rods.

ALSO,

THE MARTIN STEEL,

For Machinery Uses and Fire-Box Plates.

FORT PITT STEEL WORKS



PITTSBURGH, PA.

Reese, Graff & Woods.

DESIGNING AND ENGRAVING ON WOOD

52 JOHN ST. H. R. WHITE NEW YORK.

Chicago Metal Market.

(Reported by Cragin Bros. & Co., 141, 143, and 145 Lake street.)

CHICAGO, March 13, 1873.

Tin Plate.

IC, 10x14, Coke	$14 00	IXX, 14x20, Charcoal	22 00
IC, 10x14, Charcoal	15 00	IXXX, 14x20, "	25 00
IX, 10x14, "	18 00	IXXXX, 14x20, "	28 00
IC, 12x12, Coke		IX, 14x14, "	29 50
IC, 12x12, Charcoal	15 50	DC, 100 Plate, "	15 00
IX, 12x12, "	18 50	DX, "	18 00
IC, 14x20, Coke	14 50	DXX, "	21 00
IC, 14x20, Charcoal	16 00	DXXX, "	24 00
IX, 14x20, "	19 00		

IC, 14x20, Coke Roofing
IC, 14x20, Charcoal Roofing 14 50
IX, 14x20, " 17 50
IC, 20x28, " 30 00
IX, 20x28, " 35 00

Pig Tin.

Large, 60 ℔ 42c | Bar Tin 44c
Small, 30 ℔ 43c

Zinc.

In casks 1000 ℔s 10½c | In sheets 11c
" 500 " 10¾c | Slab 9c

Copper.

Copper Bottoms 45c
Sheathing Copper 43c
Planished Copper, 14x48 51c
Size, 14x52, 14x56, 14x60 / Nos. 7 8 9 } Planished Copper 53c

Braziers' Sheets, 30x60.

6 to 8 lbs 51c | Ingot Copper
10 and 12 lbs 48c | Bolt 50c
15 to 100 lbs 45c

Solder.

Fine, C. B. & Co.'s B'nd. 25c | Plumbers' Solder, No. 1 23c
Ordinary 23c | " " No. 2 21c

Babbit Metal 15c. @ 25c.
Galvanized Iron Conductor Pipe ℔ ℔ 10c

Sheet Iron.

	Common.	Smooth.	Charcoal.
No. 14 to 24	7 c	7¾c	9¼c
25 & 26	7¾c	8 c	9¾c
27	8¼c	8¼c	9¾c

Add ¼c ℔ ℔ for 30 in. wide.

Galvanized Iron dis 20 %

No. 16 to 20	15c	No. 27	18c
21 to 24	16c	28	20c
25 & 26	17c		

Russia Iron.

Perfect, all numbers 20c
In Sheets, 1c. higher.

Braziers' Rods.

¼ in., 10 ft. long ℔ ℔, | 3-16 in., 10 ft. long ℔ ℔,

Lead.

Pig 8¼c | Lead Pipe, when cut 11¼c
Bar 10c | Sheet Lead 11c
Lead Pipe, in full coils 11c

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers of Metals, No. 214, 216 and 218 Main street.

Tin Plate.

I. C. 10x14 Charcoal	$14·00 @ $15·00
I. C. 10x14 best Coke	13·50 @ 14·50
I. C. Terne, 14-20	12·50 @ 14·00
I. C. " 20-28	28·50 @ 29·50
I. C. Continuous	27·00

Pig Tin.

Banca none in town | English 41c
Straits 40c

Solder.

S. & Co ℔ ℔ 27c | Roofing ℔ ℔ 24c
A " 25c

Lead.

Pig ℔ ℔ 7½c @ 8c. | Bar ℔ ℔ 8½c @ 9c

Copper.

Ingot none in town | Brazier, 6 to 9 lb ℔ ℔ 51c
Planished ℔ ℔ 51c @ 54c | " 10 to 14 lb " 48c
Sheathing " 46c @ 48c | " 14 to 100 lb " 45c
Bolt " 48c | Copper Bottoms " 48c

Zinc.

Cass, 300 to 1000 lbs ℔ ℔ 11½c @ 11¾c
Case, 100 lbs " 11½c @ 12c
Slab " 7½c @ 9c

Brass.

Roll, No. 6 to 30 ℔ ℔ 45c | Wire, No. 0 to 20 ℔ ℔ 50c
" 30 to 38 " 50c | " 20 to 25 " 60c
" 38 to 40 " 65c

Babbit Metal.

Sellew & Co ℔ ℔ 35c | Market ℔ ℔ 15c
Black Lead " 25c

Antimony ℔ ℔ 22c
Bismuth ℔ ℔ $6 00
Nickel ℔ ℔ $3 00

Sheet Iron.

Russia ℔ ℔ 19 @ 23c | Am Russia A ℔ ℔ 14 @ 15c
" " B " 13 @ 14c

	Com. B.	Smooth Fin. S.	L. U.	Smooth D. Re'd.
18 to 20	6·3c	7·5c		8·5c
22 to 24	6·5c	7·8c		9·0c
26	6·8c	8·0c		9·2c
27	7·0c	8·2c		9·4c
30	8·2c			

Galvanized Iron—Full bundles, dis 15 @ 20 %.

Nos. 18 to 20	15c	No. 27	18c
22 to 24	16c	28	20c
25 to 26	17c		

Bar Steel, Silver, ℔ ℔ 22c; Crescent, 17¼ @ 18c.
Iron Wire, discount, 10 @ 15 %.
Enameled Ware, discount, 15 @ 20 %.
One Piece Corrugated Elbows.

Charcoal Iron.		Russia Iron.	
4½ inch	℔ doz $3·75	4½ inch	℔ doz $8·00
5 "	" 4·25	5 "	" 10·00
5½ "	" 5·25	5½ "	" 13·00
6 "	" 5·25	6 "	" 13·00
7 "	" 6·50	7 "	" 14·00

Leader Elbows—Flat Crimp Retinued.

	℔ doz.		℔ doz.
2-inch	$2 00	2½-inch	$3 25
3-inch	2 50	3½-inch	3 00
4-inch	3 50	4½-inch	4 00

Sheet Iron Bread Pans, ℔ ℔ 12½ @ 13c.
American Broilers, ℔ doz, $12 @ $15.
Tinmen's Machines, net list, add 5 %.
Sad Irons, ℔ ℔, 5½c. @ 5¾c.
Brass Kettles, Ansonia, 53c. @ 54c.; L. & G., 50c.
Wrought Iron Pipe dis 45 %

Inside Diameter, inches	⅛	¼	⅜	½	¾	1	1¼
Price, ℔ foot	12	12	14	15	23	34	48
Weights of Pipe, ℔ foot	·24	·42	·56	·85	1·12	1·67	2·25

Inside Diameter, inches	1½	2	2½	3	3½	4
Price, ℔ foot	60	85	1·25	1·75	2·10	2·75
Weights of Pipe, ℔ foot	2·69	3·65	5·77	7·54	9·05	10·72

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Anvils.

Armitage ℔ ℔, gold, 13c
Peter Wright's " 13½c
Wilkinson's " 12½c

Apple Parers.

Conqueror ℔ doz, $8 50
Lightning " 8 50
Turn Table " 8 50

Augers and Bits.

Cook's dis 25 %
Ives' dis 20 %
Jennings' dis 5 %
Snell's dis 10 %

Axes.

Hunt's ℔ doz $14 00 @ 15 00
Lippincott's " 13 50 @ 14 50
Lippincott's Pioneer " 14 00 @ 15 00
Simmons' " 13 50 @ 14 50

Axles.

Kritch & Crane Mfg. Co.'s—
Patent Taper Axles dis 10 %
Swelled Taper Axles dis 10 %
Concord Axles dis 10 %
Red Jacket Axles dis 10 %
Common Axles, 1¼ inch and upward ℔ ℔, 8¼c
" " less than 1¼ inch " 9¼c

Bells.

Troy, Church ℔ ℔, 55c
Light Brass, Hand dis 50 %
Moore's, Cow dis 20 %

Belts.

Arms, Bell & Co.'s Machine dis 10 %
" " " Carriage and Tire dis 60&5 %
Norway Iron Carriage and Tire dis 45&5 %
Cast Iron Barrel, Shutter, &c. dis 30 %

Cast Butt Hinges.

Narrow Fast Joint dis 15 %
Broad " " dis 30 %
" Loose " " dis 40 %
Reversible dis 40 % off list
" Japanned and Silver Tipped dis 40 % "
Loose Joint "Acorn" " " dis 35 % "
" " Japanned dis 30 % "
Excelsior Reversible Blind dis 30 %
Lull & Porter's Blind dis 30 %

Wrought Butts.

Narrow dis 10 %
Reversible dis 15 %
Broad dis 15 %
Table Hinges net list
Back Flaps net list
Inside Blind Hinges net list

Casters.

Porcelain Wheel Bed or Plate revised list dis 10 %
Iron or Brass " "

Chain.

English Coil 3-16 ¼ 5-16 ⅜ 7-16 ½ in.
15 12⅓ 11¼ 11 10¼ 10c gold
Trace 6½-10-2 75c "
7-10-2 80c "
German Coil and Halter new list add 25 % "

PHILADELPHIA CHAIN CABLE AND ANCHOR WORKS.
SHORT LINK CHAIN.

Size, inches	⅜	7-16	½	9-16	⅝	
Price cents ℔ ℔	12¾	12¼	10½	10	9½	net
Size, inches	11-16	¾	13-16	⅞	15-16	
Price, cents ℔ ℔	9½	8¾	8¾	8½	8¼	net
Size, inches	1	1 1-16	1⅛	1 3-16	1¼	
Price, cents, ℔ ℔	8¼	8¼	8	7¾	7¾	net

All larger sizes same price as 1¼ in. Stud chain 1c less than same size close link.

Chisels.

Socket, Firmer or Framing dis 50 %

Clothes Wringers.

Colby's ℔ doz $66 00
Novelty " 72 00
Universal " 72 00
Monitor " 72 00

Coffee Mills.

Parker's net list
P. S. & W. Co.'s dis 5 %

Corn Knives.

Dunn Edge Tool Co.'s Clipper ℔ doz $5 75
Disston's " 5 75

Crow Bars.

Steel Pointed ℔ ℔ 8 @ 10c
Solid Cast Steel " 20c

Cutlery.

J. Russell & Co.'s, Lamson, Goodnow & Co.'s, Landers, Frary & Clark's } new list, dis 15 %

Files and Rasps.

Nicholson's Mill Files $5 50 to the £, currency
Nicholson's Other Files 5 00 to the £, currency
Butcher's Files 7 00 to the £, currency
Heller's Horse Rasps $10 00 to the £, currency, dis 40 %

Forks and Hoes.

Auburn Mfg. Co.'s Hay and Manure Forks dis 25 %
" " Handled Hoes dis 20 %
" " Planter Eye Hoes add 15 %
Winsted's Planter Eye Hoes add 15 %

Hammers.

Yerkes & Plumb new list net
Masons' Hammers ℔ ℔ 20c
Smith Hand Hammers " " 22c

Handles.

Axe	Extra.	No. 1.	No. 2.	No. 3.
	$2·75	$2·25	$1·75	$1·00
Pick	Extra.	No. 1.	No. 1½.	No. 2.
	$2·50	$2·00	$1·75	$1·25

Smith & Montrose Fork, Hoe and Rake dis 10 %
" " Broom and Mop $12 @ $18 ℔ M.

Harrow Teeth.

Inch iron ℔ ℔ 6c
⅞ and ¾ inch iron " 6c
⅝ inch iron " 6¼c
Barbed or Headed ¼c extra

Hatchets.

Hunt's add 5 %
Simmons' dis 5 %

Hay Knives.

Lightning ℔ doz $24 00
Dunn Edge Tool Co.'s ℔ doz $14 50—dis 10 %
Fisher's " 16 50—dis 10 %

Hinges.

Strap and T—St. Louis make dis 10 % off list

Horse Nails.

Eurekas 28c rates
Ausable 22c "
Northwestern 22c "
Eagle 19c "
Globe 25c "
National Patent Pointed 21c "
" " " Extra Finished 22c "

Horse Shoes.

Rhode Island (Perkin's pattern) ℔ keg $6 87½
Burden's " 6 87½
Mule Shoes $1 00 extra
Rhode Island Trotting Shoes 2 50 "

Locks and Latches.

Jones & Nimick s dis 20 %
Moorhead, Adams & Co dis 20 %
Norwalk Lock Co.'s revised list dis 20 %

Mattocks and Grub Hoes.

Klein, Logan & Co.'s Mattocks ℔ doz. $15 00 @ 16 00
" " Grub Hoes, Oval Eye ℔ doz. 12 00 @ 13 00

Nails.

Wheeling $5 50 rates.
Orders for 100 kegs 12½c ℔ keg less.

Picks.

Klein, Logan & Co.'s R. R. and Clay ℔ doz. $12 00
" " Coal " 9 75
" " Poll " 12 00
" " Stone " 16 50
" " Tamping " 19 00

Planes.

Ohio Tool Co.'s net list
Eastern dis 5 %

Sad Irons.

Monitor Brand, Silver Polished ℔ ℔ 6c

Sash Weights.

Standard Solid Eyes ℔ ℔ 3¼c

Saws.

Disston's dis 5 %
Spear & Jackson's $5 00 to £ gold
Hubbard, Lippincott, B. & Co.'s dis 10 %
Branch, Crooks & Co.'s dis 10 %
Livingston's Patent Buck net list

Screws.

American Screw Co.'s revised list dis 45 %
$2000 worth in 6 months 2½ % extra

Scythes.

Blood's C. S. & G. S. net list
Dunn's Edge Tool Co.'s dis 15 %
Paris Furnace Co.'s dis 20 %
Waldron's English $9 00 to £

Scythe Stones.

No. 1 Indian Pond ℔ gross, ℔ 7 00
Extra " " " 7 50
Premium " 9 50 } dis 25 %
Diamond Grit " 13 50

Shovels, Spades and Scoops.

Ames' add $1 00 to list
Lippincott's new list net
Rowland's, Maxwell revised list net

Sledges.

Smith's Stone or Coal Sledges—
Steel Face Polished ℔ ℔, 17c
Solid Cast Steel " 35c
Striking Sledges ℔ ℔ extra, 1c

Snaths and Cradles dis 20 %

Springs.

Cleveland Spring Co.'s—
Carriage and Express dis 5 %
Blue Seat Springs new list dis 10 %

Tacks.

Norway Tack Co.'s ¼ weight dis 70 %
Brads dis 50 %

Traps.

Newhouse Patent dis 12½ %
Reichard's Animal, Wood Bottom ℔ doz $10 00
" " Metal Bottom " 12 00

Vises.

Solid Box ℔ ℔ 18c
Wilson Mfg. Co.'s dis 15 %

Wrenches.

Coes' Genuine dis 25 %
" Pattern dis 40 %
Taft's dis 50 %

London Metal Market.

(From The Mining Journal.)

	£.	s.	d.	£.	s.	d.
Copper—℔ ton.						
Best Selected	96	0	0	98	0	0
Tough Cake & Tile	92	0	0	96	0	0
Sheathing and Sheets	98	0	0	100	0	0
Bolts	102	0	0	103	0	0
Bottoms	103	0	0	—		
Old (Exchange)	94	0	0	—		
Tubes	90	0	0	91	—	
Wire	℔ ℔.	0	1	1¼	—	
Tubes	"	0	1	0¾	0	1
Brass—℔ ton.						
Sheets	0	0	10	0	0	10½
Wire	0	0	10¾	—		
Tubes	0	0	11¾	0	0	11¾
Yellow Metal Sheathing	0	0	8½	0	0	9
Sheets	0	0	8¾	0	0	9
Tin—℔ ton.						
English Blocks	146	0	0	—		
Ditto Bars	147	0	0	—		
Ditto Refined	149	0	0	—		
Banca	147	0	0	—		
Straits	143	0	0	—		
***Tin Plates—† ℔ box.**						
IC Charcoal 1 qual.	2	1	0	2	2	0
IX " 1 qual.	2	7	0	2	8	0
IC " 2 qual.	1	18	0	2	1	0
IX " 2 qual.	2	4	6	2	7	0
IC Coke	1	15	6	1	16	0
IX "	2	1	6	2	2	0
Canada Plates ℔ ton.	24	0	0	—		
" at works	21	0	0	22	0	0
Spelter—℔ ton.						
Foreign	25	10	0	26	0	0
To arrive		—			—	
Zinc—℔ ton.						
In Sheets	33	0	0		—	
Iron—℔ ton.						
Bars Welsh, in London	12	0	0	12	15	0
" to arrive	13	0	0			
Nail Rods			nom.			
Nail Rods, Staff'd in L'ndon			"			
Bars	14	0	0	15	0	0
Hoops	14	17	6	15	10	0
Bars at Works	13	0	0	14	0	0
Hoops ditto	14	0	0	15	0	0
Sheets, single	18	0	0	19	0	0
Pig, No. 1, in Wales	6	0	0	7	0	0
Refined metal ditto	7	0	0	8	0	0
Bars, common, ditto	11	10	0		nom	
Do, merchant, Tyne or Tees	12	0	0		—	
Ditto, Railway, in Wales	11	0	0	11	10	0
Ditto, Swedish, in London	17	10	0	18	0	0
To arrive		—			—	
Pig, No. 1, in Clyde	6	16	0	7	5	0
Ditto, f.o.b., Tyne or Tees	4	10	0	5	10	0
Ditto, Nos. 3, 4, f.o.b.		—			—	
Railway Chairs	5	5	0	6	0	0
" Spikes	13	10	0	14	0	0
Indian Ch'coal Pigs in L'don	7	0	0	8	0	0
Steel—℔ ton.						
Swedish, in kegs (rolled)		—			—	
Ditto (hammered)	18	10	0	19	0	0
Ditto, in faggots		—			—	
English, spring	20	0	0	25	0	0
Quicksilver—℔ bottle.	13	0	0		nom	
Lead—℔ ton.						
English Pig, common	22	10	0	22	15	0
Ditto, LB	22	10	0		—	
Ditto, WB	23	0	0		—	
Ditto, Sheet	23	5	0	23	10	0
Ditto, Red Lead	23	0	0		—	
Ditto, White	29	0	0	31	0	0
Ditto, Patent Shot	23	0	0	23	5	0
Spanish	22	0	0	23	5	0

* At the works, 1s. to 1s. 6d. per box less. Terne Plates 2s. per box below Tin Plates of similar brands. † Add 6s for each X.

ANNOUNCEMENT.

Office of

London Manu'fg. Co.,

246 Grand Street, New York.

To Coach Makers, Hardware Manufacturers, Ca Builders and the Trade generally, using

Brunswick Black.

Aware of the impracticability of importing this article at a price sufficiently cheap for consumption here, we take pleasure in stating that, aided by an extended experience in England, Canada and the U. S., we are enabled to supply an article, which, upon trial, will demonstrate its being EQUAL TO ANY English made, and superior to all manufactured in America, for its quick self-drying quality, as well as for its being a durable and brilliant Black.

Brunswick Black,

No. 1.....$1·50 per gall. No. 2.....$1·25 per gall.

The London Manufacturing Company in submitting the

Dazzle Black Baking Japan

(and their Japans generally)

would call the attention of Sewing Machine Companies, Lock Manufacturers, Japanners and other manufacturers using or handling Japans, to its peculiar qualities, both as a preparing and finishing Japan. For the fine work of Sewing Machine Companies and Ornamental Japanners the DAZZLE BLACK BAKING JAPAN is highly desirable, because coupled with brilliancy is durability, and with them is combined the fact that it will NOT "Chip."

THE LONDON MANU'FG. CO

Manufacture only

JAPANS AND BRUNSWICK BLACK.

Factory, Newark, N. J. Office, 246 Grand St., N. Y

Especially adapted for the Iron and Metal Trades.

55 Beekman St., NEW YORK.

Send for Samples and Prices.

Do your own Printing with a

Novelty Printing Press,

the best yet invented for amateur and business purposes, and unsurpassed for general job printers. Over 8000 in use. **Benj. O. Woods,** Manufacturer and Dealer in every description of Printing Material, 349-351 *Federal & 152 Kneeland St's, Boston. Branch Store, 543 Br'du'y & 88 Mercer St., N. Y. Agents, Kelly, Howell & Ludwig, Philadelphia, J. F. Edwards, St. Louis, Mo., A. C. Kellogg, Chicago Ill.* Send a ne forw Illustrated Pamphlet.

James M. Berry, Newmarket, N. H., Writes Nov. 25th, 1872.—I think the Novelty is the best press yet invented; I am certain that it can be worked at a much greater rate of speed and do better work than any other amateur press.

Wm. A. May, Chicago & Canada R. R. Co., Morenci, Mich., Writes Jan. 10th, 1873.—I have recently been doing some very fine work on my little Novelty, in fact, quite throwing the "regular" job offices in the shade.

T. J. Turley, Franklin, Tenn., Writes Nov. 6th, 1872.—Some months ago I purchased one of your Duodecimo Novelty Presses, and I am happy to say that it works admirably and far exceeds my most sanguine expectations in the manner it does its work.

A. S. K. Holbrook, Ogdensburg, N. Y., Writes Nov. 26, 1872.—My Novelty does work equal to that of the best offices in this city.

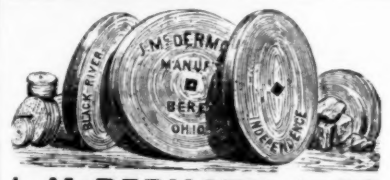
P. P. Mast & Co., Buckeye Agricultural Works Springfield, Ohio, Write July 29th, 1872.—Our Novelty Press works to our entire satisfaction.

Oscar F. Black, Vergennes, Vt., Writes Dec. 16th, 1872.—My Novelty works splendidly.

F. H. Pinkham, New Market, N. H., Writes Aug. 9th, 1872.—I like my "Novelty" better and better every day; I am surprised at the speed with which work it

J. A. Morrill, Fulton, N. Y., Writes Nov. 25th 1872.—The Duodecimo Novelty Press which I purchased about two weeks ago works splendidly; card printed on it seem as fine as engraved.

Grindstones, Emery, &c.



J. McDERMOTT & CO

MINERS AND MANUFACTURERS OF

GRINDSTONES.

Black River, Independence and Berea Grits.

BUILDING STONES

of every description, from the above quarries.

OFFICE, National Bank Buildings.

Cor. Superior and Water Sts. CLEVELAND,

WALTER R. WOOD & CO.,

Manufacturers of and Dealers in American & and Foreign

283 and 285 Front Street, NEW YORK.

BEREA, O

GRINDSTONES

AND OHIO BUILDING STONE.

TRADE MARK.

THE UNION STONE CO

Patentees and Manufacturers of

Emery Wheels,

Oil Stones, and Emery Blocks,

To order in size and form to suit various mechanical uses. **Grinders, Saw Gummers, Diamond Tools,** and **Wood's Patent Knife Grinder,** for Planing, Paper Cutting, Tobacco, Leather-splitting and other Long Knives. Also, Mill Stone Cement.

16 Exchange St., BOSTON, MASS

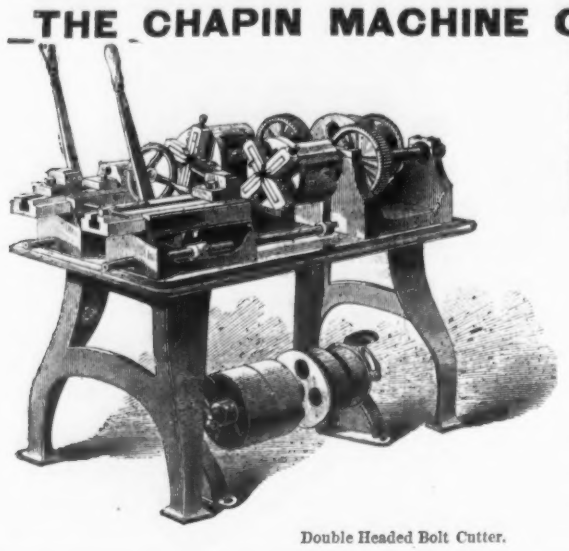
Branch Offices, { 93 Liberty Street, NEW YORK. 502 Commerce St., PHILADELPHIA

Send for Circular.

Machinery, &c.

THE CHAPIN MACHINE COMPANY,

NEW HARTFORD, CONN.



Double Headed Bolt Cutter.

Manufacturers of the latest improved

BOLT MACHINERY,

Double and Single Head Bolt Cutters,

Will cut from 5,000 to 10,000 per day.

Chapin Header

Will head from ¾ Iron down. Will head 10,000 Bolts per day

Send for Circular.

BUSH HILL IRON WORKS,

Corner 16th & Buttonwood Streets,

PHILADELPHIA.

JAMES MOORE,

(Successor to MATTHEWS & MOORE,)

Engineer, Machinist, Founder and Boilermaker,

CASTINGS of every description.

ROLLING MILL AND FURNACE EQUIPMENTS COMPLETE.

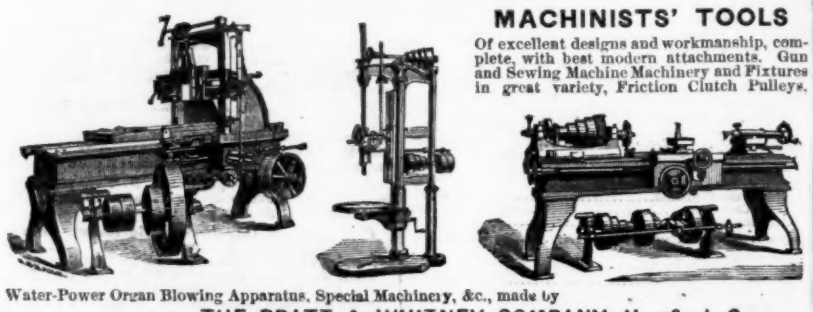
Rolls Turned for Rails, Beams, Angles, and all shapes for Iron, Steel, or Composition Metals.

Sugar Mill, Saw Mill and Grist Mill Machinery,

AND MILLWRIGHTING IN GENERAL.

BOILERS---FLUE, TUBULAR AND CYLINDER, and all kinds of

TANK AND PLATE IRON WORK.



MACHINISTS' TOOLS

Of excellent designs and workmanship, complete, with best modern attachments. Gun and Sewing Machine Machinery and Fixtures in great variety, Friction Clutch Pulleys.

Water-Power Organ Blowing Apparatus, Special Machinery, &c., made by

THE PRATT & WHITNEY COMPANY, Hartford, Conn.

UPRIGHT BALANCE ENGINE

AND

Kindling Wood Splitters

Also, all kinds of

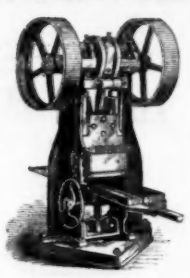
Kindling Wood Machinery, &c., &c.

For Illustrated Price List and Circular, address

D. A. GREENE,

326 & 328 Delancey Street,

NEW YORK CITY



Established 1848.

WM. SELLERS & CO.,

1600 Hamilton Street, PHILADELPHIA.,

Engineers, Iron Founders and Machinists.

RAILWAY SHOP EQUIPMENTS.

Our Steam Hammers, Lathes, Planers, Drills and Bolt Cutters

Are of **Improved and Patented Construction.**

Railway Turning and Transfer Tables,

SHAFTING & MILL GEARING, a specialty.

Pivot Bridges.

GIFFARD'S INJECTOR--IMPROVED, SELF-ADJUSTING.

Whitlock's Lifter for Drop and Trip Hammers, Pile Drivers, etc.

Requires less regular power than any other and can be worked as perfectly. Warranted as represented. For full particulars address

CHAPIN MACHINE CO.,

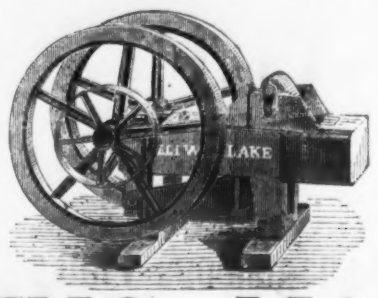
NEW HARTFORD CONN.

Who also manufacture **BOLT CUTTERS and HEADERS.**

Machinery, &c.

IMMENSE SAVING OF LABOR.

BLAKE'S



PATENT

CRUSHING MACHINE

for reducing to fragments (of any required size) all kinds of

Hard and Brittle Substances, such as

ROCKS, ORES, MINERALS AND DRUGS.

For Circulars containing particulars and numerous testimonials, for Price Card, or for other information in the premises, address

BLAKE CRUSHER CO., New Haven, Conn.,

or, E. S. BLAKE, Pittsburgh, Pa.

Persons visiting New York City can see a Crusher in operation by inquiring of B. R. WESTERN, Esq., 37 Park Row, who will give information and prices and receive orders.

HOADLEY'S STEAM ENGINES, PORTABLE AND SELF-CONTAINED,

FOR

SAW MILLS

Tanning,

MECHANICS' SHOPS,

Factories, &c., &c.

AND FOR

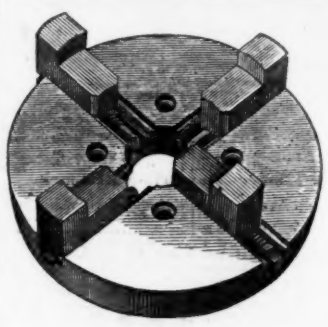
Threshing & Farm Use,

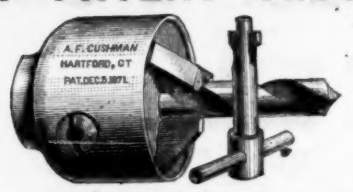
J. C. HOADLEY & CO

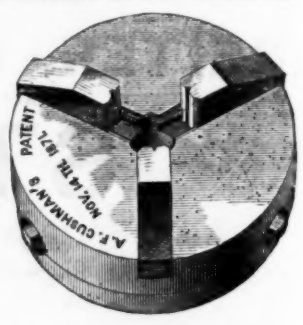
Lawrence, Mass.

Send for Circular.

NEW PATENT CHUCKS.







For Catalogues and Prices address the Manufacturer,

A. F. CUSHMAN,

HARTFORD, CONN.

PORTABLE DRILLING MACHINE.

THORNE, DeHAVEN & CO.,

Twenty-First St. above Market,

PHILADELPHIA.

Send for Photograph and Circular.

Copy of Letter from Southwark Foundry.

HENRY G. MORRIS, late Merrick & Sons.

PHILADELPHIA, January 9th, 1872

MESSRS. THORN, DEHAVEN & CO., *Gentlemen*:—For the erection of heavy machinery your *portable drill* effects an IMMENSE SAVING in labor and in time, not only on such heavy or awkward pieces as cannot be conveniently placed under or before a fixed drilling machine, but also ON MUCH OF WORK WHICH COULD BE, AND GENERALLY IS, DRILLED BY FIXED OR RADIAL MACHINES.

Respectfully, yours, ROBT. BRIGGS, Supt.

BACON'S HOISTING ENGINES

AND

Hoisting Machinery,

Of all descriptions, for

Blast Furnaces, Mines, Docks, Steamships, Contractors' use, &c.,

Safety Hoist Engines,

for Stores and Warehouses.

These Engines are strong, compact, powerful, and cheaper than any thing in the market.

Manufactured by the

Morris County Machine & Iron Co.

36 Cortlandt St., New York,

Works, Dover, N. J.

Contractors for River, Harbor and Bank Improvements, Steam Dredging Machines, Steam Tugs, etc.

TAWS & HARTMAN, ENGINEERS,

1235 and 1237 North Front St., Phila.

Blast Furnaces and Rolling Mills

DESIGNED AND CONSTRUCTED.

Drawings for Machinery made, and Estimates furnished. Special Fittings for **Blast Furnaces** on hand and made to order.

Taws & Hartman's Patent Air Hoist.

AGENTS FOR

KENT'S PATENT HOT BLAST PIPE.

Thomas' Pat. Safety Lift for Bell & Hopper, prevent explosions. Also,

MORTON'S PATENT WATER BREAST.

Machinery, &c.

ANDREW WATSON,
MACHINIST and ENGINEER,

Nos. 537 & 539 Dickinson Street,
Near Trenton Avenue, 19th Ward, PHILADELPHIA.

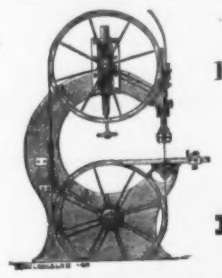
Builder of ***Vertical Steam Engines and Boilers,*** peculiar for their economy of space and fuel, safety and quickness in raising Steam. Also, sole manufacturer of ***Improved Balance Governor*** with automatic stop, ***Balance Slide Valve, Safety Valves, Stop Valves, Improved Pistons for Engines,*** which require no setting by the Engineer. Engine Builders and Dealers supplied with ***Governors, Stop Valves, Safety Valves, &c., &c.*** These governors are fitted up in the very best manner, with brass Valves and Seats, which will not corrode or stick fast. Guaranteed to regulate under any irregular load which an Engine is subject to. Millwright work executed, and Machinery in general satisfactorily repaired.

Engines Indicated Promptly and with the Greatest Accuracy.

EDWIN HARRINGTON,
MANUFACTURER OF
ENGINE LATHES,
AND OTHER MACHINISTS' TOOLS,

Corner of North Fifteenth St. & Pennsylvania Ave., Philadelphia

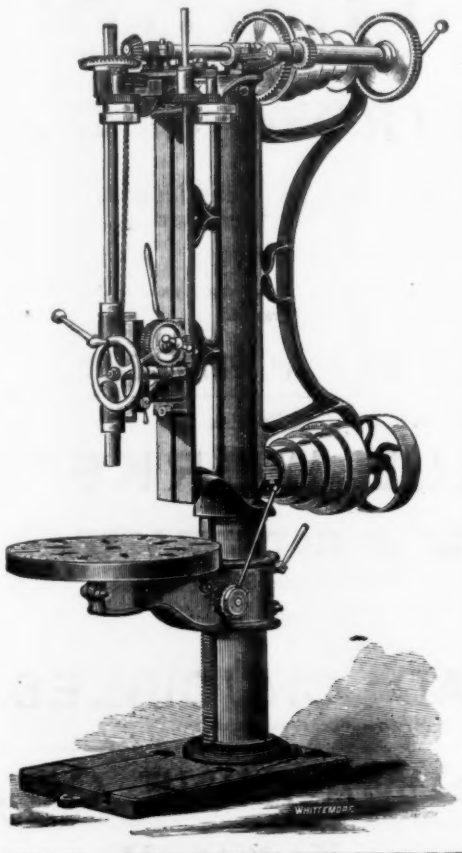
---



BAND SAW MACHINERY
For Ship & Car Builders, Agricultural, Wagon, Pattern and Cabinet Shops.

"Perin" French Band Saw Blade
KEPT IN STOCK.

RICHARDS, LONDON & KELLEY,
22nd above Arch, PHILADELPHIA.



P. BLAISDELL & CO.,
Worcester, Mass.,
MANUFACTURERS OF
Engine Lathes & Drill Presses.

RICHARD DUDGEON,
No. 24 Columbia Street, New York,
MAKER AND PATENTEE OF
Hydraulic Jacks and Punches,
ROLLER TUBE EXPANDERS
And Direct-Acting Steam Hammers.

Communications by letter will receive prompt attention.

JACKS for Pressing on Car Wheels or CRANK PINS made to order.

The Bessemer Steel Works,
of John A. Griswold & Co.
Troy, N. Y., May 3, 1872.

B. F. Sturtevant, Boston, Mass.,

Dear Sir,—We have changed your No. 8 for your No. 9. Pressure Blower. The time in melting is about the same with either Blower. We are melting 225,000 lbs. (112½ tons,) Pig Iron daily, (20 hours running time.) It works well.

BARNEY MEE, Supt.

New York Steam Engine Co.,
MANUFACTURERS OF
Engine Lathes, Planers, Bolt Cutters, Upright Drills
AND
MACHINISTS' TOOLS
OF ALL DESCRIPTIONS.

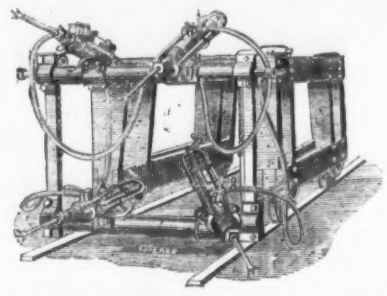
Office and Wareroom, 121 Chambers and 103 Reade Sts., New York.

WORKS AT PASSAIC, NEW JERSEY, WITHIN 11 MILES OF NEW YORK CITY.

GEORGE PLACE, Prest JOHN H. CHEEVER, Treas. CHAS F. HARDWICK, Sec'y.

Machinery, &c.

THE BURLEIGH ROCK DRILLS
AND
AIR COMPRESSORS



are pronounced by the most eminent engineers in the country as a necessity for the practical working of all ***Mines, Tunnels, Quarries, &c.*** The above machinery is the only machinery that has ever done any successful Tunnel work in America. (They are to be used on the St. Gothard Tunnel, Switzerland. Tunnel 12 miles long.) We refer to the following eminent engineers and works:

Gen. Newton, U. S. A.	Hell Gate Tunnels, L. I.
Mess. Shanley	Hoosac Tunnel, Mass.
J. Dutton Steele	Nesquehoning Tunnel, Pa.
Sidney Dillon	Fourth avenue Work, N. Y.
Col. Roebling	East River Bridge Company, N. Y.

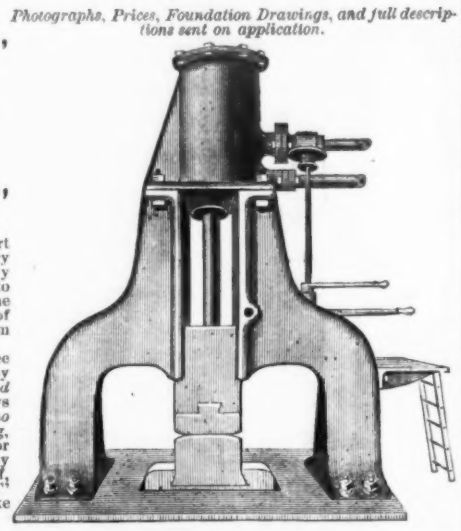
Send for Illustrated Pamphlet to

Burleigh Rock Drill Company,
FITCHBURGH, MASS.

FERRIS & MILES,
Photographs, Prices, Foundation Drawings, and full descriptions sent on application.

24th & WOOD STS.,
(Take Arch or Race & Vine Street Cars,)
PHILADELPHIA.

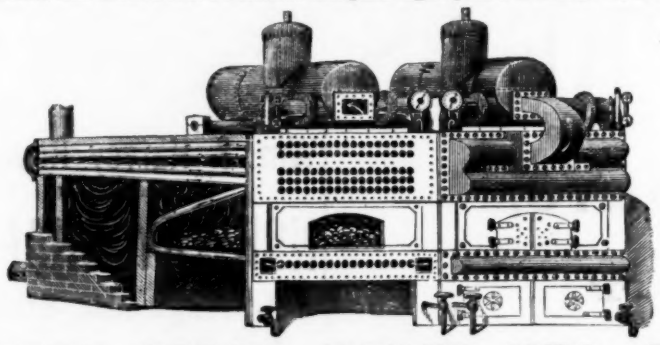
Steam Hammers, Drops, Etc.,
With our latest Improvements.



60 different styles and sizes, extra long or short stroke, from 100 lbs. upward, suited to every kind of work in Iron and Steel. The heavy Ram, guided in broad bearings close down to its work, produces the greatest effect with the least expenditure of steam, ensures accuracy of Die work, and saves piston and cylinder from the shock of impact.

Our patent balanced valve gear of but three moving pieces, takes up its lost motion by gravity. It reduces to a minimum, the *required steam power*, friction, wear and repair. Boys of 12 easily manage it *by a single lever with no extra gear;* strike dead or elastic blows, long, short, light, quick, slow, heavy, by hand or automatic, at will. The hammer-man, also, by our New Patent Treadle, can work it himself, with his foot, and stop or start "*on the blow*," the hammer always stopping *up*, ready to strike again.

THESE BOILERS
Have stood the most severe tests for the past eight years without an accident.

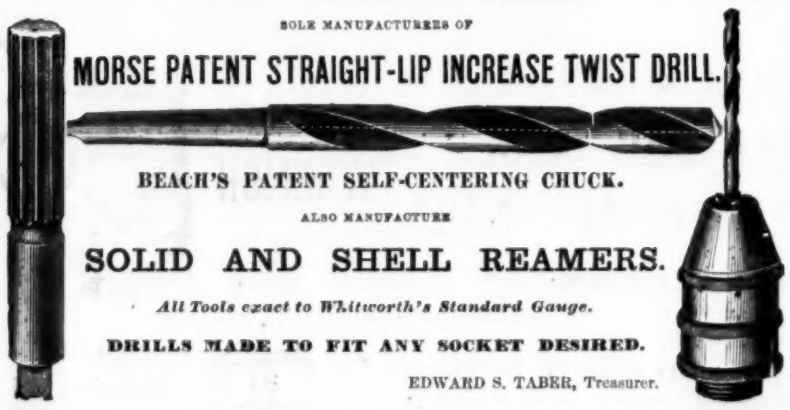


SAFETY STEAM BOILER MFG. CO.,
THOMAS VERNER, Proprietor,
MANUFACTURER OF
Non-Explosive Boilers, Steam House Heaters, Engines & General Machine Work

These Boilers are safe from explosion: are very durable and economical, both in fuel and repairs They have few joints or connections, and none of these in fire surface, perfectly free expansion; the circulation of water through the tubes keeps them perfectly clear of scale and sediment.

WORKS: 30th and Chestnut Streets, PHILADELPHIA.

Morse Twist Drill and Machine Company,
New Bedford, Mass.,
SOLE MANUFACTURERS OF
MORSE PATENT STRAIGHT-LIP INCREASE TWIST DRILL.



BEACH'S PATENT SELF-CENTERING CHUCK.
ALSO MANUFACTURE
SOLID AND SHELL REAMERS.
All Tools exact to Whitworth's Standard Gauge.
DRILLS MADE TO FIT ANY SOCKET DESIRED.

EDWARD S. TABER, Treasurer.

BADGER MACHINE WORKS
FOR SALE.

In order to close an estate, the subscriber offers for sale the entire works conducted by the late A. M. BADGER.

For particulars inquire of

S. A. BADGER, Admi'x.
Nos. 4 & 6 Hill Street, ROCHESTER, NEW YORK.

October 18, 1871.

Machinery, &c.

WESTON'S
PATENT DIFFERENTIAL
Pulley Blocks,

Warranted superior to an made

RATCHET DRILLS,
Machine Finished, Case Hardened and Interchangeable.

HOOKHAM'S PATENT STEEL
Ribbon Sash Line,

Working qualities superior, decidedly ornamental carefully lacquered, and will remain so.

VAN WART & McCOY,
Sole Agents,
43 Chambers Street, New York.

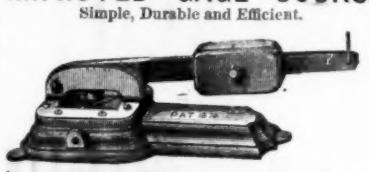
VOLNEY W. MASON & CO.,
Manufacturers of patent
FRICTION PULLEYS,
Friction Clutches for connecting Shafting & Gearing
Hoisting Machinery for Elevators
Mines, Quarries, Pork Packing Houses Abbatoirs, Warehouses, etc.
SHAFTING, HANGERS and GEARING
PROVIDENCE, R. I.

JAMES HENSHALL,
Engineer, Machinist & Blacksmith
1056 Beach St., PHILADELPHIA.

Drawings made to order. Repairing of all kinds promptly attended to. Blacksmithing executed in all its branches.

Frederic Fuller,
Manufacturer of
COMPOSITION ROLLS
For Paper Machinery and Calenders. Also,
Church and Factory Bells and Brass and Bronze Castings
of every description.
438 S. Main St., PROVIDENCE, R. I.

IMPROVED GAGE COCKS.
Simple, Durable and Efficient.



Automatic Damper Regulator,
FOR STEAM BOILERS.
SAFETY, ECONOMY & DURABILITY
MURRILL & KEIZER, Baltimore.
Agents Wanted. Send for Circulars.

PERSEVERENCE
STEAM ENGINE WORKS,
Steam Engines and Boilers,
From 2 to 100 horse power, built to order. A supply of second hand Boilers and Engines always on hand.
J. W. WRIGHT, 112 Spruce Street Phila.

STEAM ENGINES.
Portable and Stationary. "The Best, Cheapest, most Durable." Improved Circular Saw Mills, Screw and Lever Set. Send for Circular. UTICA STEAM ENGINE CO. Utica, N. Y. G. G. YOUNG, General Agent, 42 Cortlandt Street, New York.

PUNCHING PRESSES.
For the **Best** and **Cheapest,** address THE STILES & PARKER PRESS CO.,
MIDDLETOWN, CONN.

SAFETY GOVERNOR "ACME."
Superior to all others, because the valve is steam balanced and *larger*; will bear greater changes of pressure of steam, and run the engine smoother and more regular during changes of load. *All trials at manufacturer's risk.* Circulars free. Address
J. D. LYNDE, Patentee,
405 N. 8th Street, Philadelphia, Pa

American Chain Cable Works,
28 Years' Experience in the Business.
KENDRICK & RUNKLE, Trenton, N. J.,
Manufacturers of **Cable, Crane, Coal Mine, Slope, Car Brake Chains, Traces, Breast, Binding, Cow and Log Chains** of all kinds.
N B.—The highest grades of Crane Chains a specialty.

Burnet & Leonard,
Steam Boiler Manuf'rs,
2d Wharf above Bridge St., Newark, N. J.
Vertical Boilers, 2 to 20 Horse Power, constantly on hand.

TUBAL SMELTING WORKS,

760 South Broad Street, PHILADELPHIA.

DUPLAINE & REEVES,

MANUFACTURERS OF

ANTI-FRICTION METALS

OF VARIOUS GRADES.

XXX Metal Nickel Hardening	55 cts. ℔ lb	D, E, F — These metals are alloys of lead, with a large percentage of tin, antimony and copper, according to price.	25 cts. 20 cts. 18 cts.
XX Metal Nickel Hardening	50 cts. ℔ lb		
X Metal Copper Hardening	45 cts. ℔ lb		
" "	40 cts. ℔ lb	G, H, I, J — These metals are the ordinary low priced Babbitt alloys, used where there is not much wear on the machinery, and where economy is required.	16 cts. 14 cts. 14 cts. 12 cts.
B "	35 cts. ℔ lb		
C " " "	30 cts. ℔ lb		

BRASS CASTINGS

Of all qualities of metals, 28 to 45 cts. ℔ lb. Pig Brass, 23, 25, 28, 31, 36, cts ℔ lb. Importers of Block Tin, Lead, Antimony, Spelter, Crucibles, etc.

J. E. HALSEY, Agent for New York,

P. O. Box 4140. 76 Reade St., N. Y.

Plumb, Burdict & Barnard,

BUFFALO, N. Y.

MANUFACTURERS OF

BOLTS

COACH SCREWS,

SKEIN BOLTS,

PATENT

Diamond Neck Carriage Bolts,

TIRE, SLEIGH SHOE,

Machine and Blank Bolts.

FERNALD & SISE, N. Y. Agents, 31 Beekman St.

AUSABLE HORSE NAIL CO.,

MANUFACTURERS OF

SUPERIOR HAMMERED HORSE NAILS.

FROM

BEST NORWAY IRON.

ORDERS PROMPTLY FILLED AT LOWEST MARKET RATES.

ABRAHAM BUSSING, Secretary,

35 Chambers Street, NEW YORK

N. B.—Beware of imitations. No machines the same as ours are in operation in the United States east the Alleghany mountains

GLOBE NAIL COMPANY,

MANUFACTURERS OF

Pointed, Polished & Finished Horse Shoe Nails.

Recommended by over 20,000 Horse Shoers.

All Nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

GLOBE NAIL CO., Boston, Mass.

Semple, Birge and Co.

HARDWARE SPECIALITIES AND AGRICULTURAL TOOLS

ST. LOUIS, MO.

OHIO BUTT CO.,

MANUFACTURERS OF

CAST BUTT HINGES,

FAST, LOOSE AND REVERSIBLE.

Factory at Joliet.

SEMPLE, BIRGE & CO.

General Agents,

SAINT LOUIS, MO.

OILERS! OILERS!

J. H. WHITE, Newark, N. J.,

MANUFACTURER OF

Olmsted Patent and Common Oilers,

of all descriptions,

Colwell Patent Door Spring Children's Carriage Trimmings, Spun and Stamped Brass for all Trades, Dies and Tools, &c., &c.

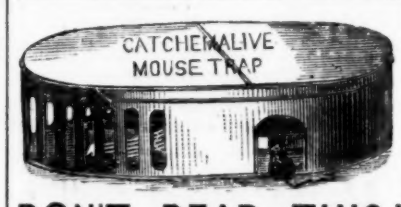
Wm. & Harvey Rowland,

Manufacturers of

NORWAY SHAPES,

Springs and Steel,

No. 948 Beach St., Philadelphia.



DON'T READ THIS!

BECAUSE

Each mouse caught resets the Trap for another!

A

Fruit Jar WRENCH

That every housekeeper will not be without after one trial!

The Celebrated **TUBULAR** AND OTHER **LANTERNS.**

Brass and Iron **Jack Chain.**

For sale by all the trade.

R. E. DIETZ,

Patentee and Manufacturer,

54 & 56 Fulton, and 29 & 31 Cliff St., NEW YORK.

Established 1827.

Dixon's Stove Polish; Dixon's Black Lead Crucibles; Dixon's Lubricating Plumbago; Dixon's Plumbago, all kinds, for all uses; Dixon's Lumber Pencils.

After 8 Years of Preparation,

Dixon's American Graphite Polygrade Pencils.

A Special Stamp on all of our Pencils will be a Skeleton Crucible. There will be no numbers to denote the grades, but letters instead, as follows:

S. "SOFT."—For heavy black marks, or for directing parcels. Too soft for the pocket or general use. S. M. "SOFT MEDIUM."—For general commercial or pocket use. The most popular grade. M. "MEDIUM."—For Stenographers, Draughtsmen, Banks, Bookkeepers, Physicians, and all fine desk work. A smooth, fine Pencil that holds its point well. H. "HARD."—For Civil Engineers, Architects, Draughtsmen, &c. A very fine, clean line. V. H. "VERY HARD."—For the finest lines, equal to a steel graver.

Samples Free by Mail. Address

The Joseph Dixon Crucible Company,

JERSEY CITY, N. J.

BLACK LEAD

CRUCIBLES.

TAYLOR, STROW & CO.,

The Largest Manufacturers of Black Lead Crucibles in the United States.

All sizes constantly on hand for melting Steel, Brass and other metals. Also any size or shape made Chemical Assaying and Refining purposes. All our Crucibles are warranted.

1330, 1332 & 1334 Callowhill Street, PHILADELPHIA.

PENNSYLVANIA

CRUCIBLE WORKS.

ROSS, STROW & HOFERKAMP,

1438, 1440, 1442 & 1444 North Sixth Street,

PHILADELPHIA, PA.,

MANUFACTURERS OF

BLACK LEAD CRUCIBLES.

Warranted equal to any in the market, and sold in quantities to suit purchasers.

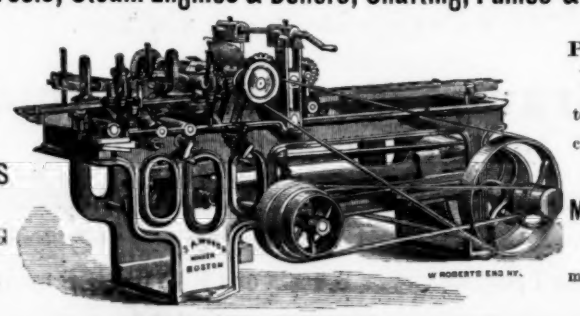
S. A. WOODS MACHINE CO.,

Manufacturers of all kinds of

WOOD WORKING MACHINERY,

And Iron Tools, Steam Engines & Boilers, Shafting, Pullies & Hangers.

ALSO, SOLID EMERY WHEELS AND GRINDING Machines.



PLANER KNIVES to fit any machines.

MOULDING Cutters made to order.

Send for Circulars and Price List.

Machinery Depots, 91 Liberty Street, N. Y. 67 Sudbury Street, Boston, Mass.

THE IVENS & BROOKE PATENT

ECCENTRIC GEARED

POWER PRESS

For Punching, Shearing, and Stamping Metals.

Irregular motion of Crank-Shaft corrected by Eccentric Gear.

Saves 50 per Cent.

in wear of Dies and Punches and time lost in changing them. At **same speed** with the old Press, this gives **double the time** to adjust the work, insuring accuracy and greater production.

The Patent Adjustment warranted **Positive** under all pressures, and susceptible of the nicest shade of variation.

MANUFACTURED BY

AMERICAN SAW CO.,

No. 1 FERRY STREET, N. Y. FACTORY, TRENTON, N. J.

Send for Descriptive Circular.

JOHN TOLER, SONS & CO.

MANUFACTURERS OF

FURNITURE CASTERS.

We make the greatest variety of any house in the States. We confine ourselves exclusively to their manufacture, and guarantee the quality. We solicit only the trade, to whom we are prepared to give the best prices.

ESTABLISHED IN 1844.

108, 110, 112, 114 Adams Street, NEWARK, N. J.

Sole manufacturers of Ford's Celebrated Patent Casters.

The Recording Steam Gauge Co.,

91 Liberty St., New York.

Sole Proprietors and Manufacturers of

STEAM RECORDING & INDICATING GAUGES

Also, Manufacturers of

Superior Locomotive and other Gauges, Engine Counters.